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THE GAS JOURNAL

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A Glance at the Contents—

Corporation Undertakings.

We continue our record of the working results of municipally-owned gas undertakings during the year 1929-30.

Tours of Inspection by Juniors.

Reports appear of the visits of the Wales Juniors to East Greenwich, the Western Juniors to Plymouth, and the Manchester Juniors to Wallasey.

Correspondence Classes.

Mr. R. J. Rogers, of the Birmingham Gas Department, urges the speedy formulation of correspondence classes for the rank and file of our industry.

Scholarships at Leeds University.

Announcement is made of the award of the Cartwright Holmes Scholarship and the Corbet-Woodall Scholarship tenable at the University of Leeds.

A Firm's Bi-Centenary.

Last week the firm of W. & T. Avery, Ltd., celebrated their bi-centenary. Their main works are at Soho Foundry, Birmingham, made famous by Boulton, Watt, and Murdoch.

British Acetylene Association.

The uses to which oxy-acetylene welding can be put on the works seem to be many and varied, and the Report of the Council of the British Acetylene Association, which is to be presented at the International Congress to be held at Zurich, from July 9 to 12, contains some interesting details of some of these processes. A brief review of this Report will be found on a later page.

"Thylox" Liquid Purification.

Mr. F. B. Colbert gives an account of a 10-million "Thylox" plant at Racine. The absorption of hydrogen sulphide and hydrocyanic acid from the gas is carried out at Racine in a single scrubber in which the gas passes upwards counter-current to the descending "Thylox" solution. About 97 p.ct. of the H_2S is removed in this absorber, the remaining traces of H_2S being removed from the gas in oxide boxes. Practically complete removal of hydrocyanic acid is obtained in the absorber.

Menace of Inefficient Equipment.

In the first place, says Mr. H. P. Morehouse, inefficient equipment brings about a dissatisfied customer, which not only puts our load in a hazardous position, but also curtails our efforts to obtain further load in this plant. In the second place, dissatisfaction is a prolific breeder and very often spreads to the key men in other plants where we hope to obtain a similar load on gas. The third menace—it furnishes an entering wedge for other fuels or forms of energy and offers a good competitive salesman an excellent opportunity to do his stuff. Many times the electric salesman, or even the oil salesman, steps in here and gets the load, while we gas men sit back in our alibi armchairs and talk about the "romance of electricity" being a hoodoo over which we cannot rule.

Holder Inquiry.

Objections by owners of residential property in the district to the erection of an additional gasholder by the Tunbridge Wells Gas Company were heard by an official arbitrator at the Town Hall, Tunbridge Wells, on June 25.

New Works at Bow Common.

The Lord Mayor of London, Sir William Waterlow, K.B.E., J.P., inaugurated last week the reconstructed works of the Gas Light and Coke Company at Bow Common. These works, which have been reconstructed on up-to-date lines since 1926, were originally built for the Great Central Gas Consumers' Company, and were acquired as the result of one of the early amalgamations. They are remarkable in that they were, and are, situated in an area supplied by another Company—the Commercial Gas Company—so that the gas has to be conveyed into the Gas Light and Coke Company's area through a system of high-pressure mains. The works, even as reconstructed with a greatly increased output, can make only 4½ p.ct. of the total gas made by the Company.

Coke Marketing Problems.

In a discussion on this subject, prepared for the Sub-Committee on Coke of the American Gas Association Carbonization Committee, and incorporated in the report on coke presented at the Joint Production and Chemical Conference, Cleveland, Ohio, May 21-23, Mr. A. Fischer, of the Semet Solvay Engineering Corporation, and Mr. R. P. Tibolt, of the New England Coke and Coal Company, emphasize the fact that every producer of coke must ensure the growing popularity of this fuel by protecting quality and by intelligent marketing methods. The coke producer, the authors suggest, can profitably co-operate with the furnace and boiler industry. Primary attention should, however, be given to the home vicinity retail market, which is generally the most lucrative and is the natural outlet. The article also deals with advertising methods for coke merchandizing, activities against smoke, and dustless treatment through the use of moisture absorbing chemicals.

Mr. H. C. Widlake's booklet on "The Fusion of Gas Pipes" has gone to another edition owing to the widespread demand, and is obtainable from these offices at the following prices: Single copies 6d. (post free); 12 for 5s., 50 for 20s., 100 for 35s.—postage extra.

EDITORIAL NOTES

Summer Weather

THE perfect summer weather which has lately been experienced so generally over the country—and particularly the brilliancy of the week-ends—has compelled the thoughts of those destined to remain in town to wander to the more fortunate people who are enjoying all that the seaside has to offer. There must be a boom in sun bathing, as well as in other kinds of bathing, and our favourite resorts should be having a profitable time. If the present delightful meteorological conditions continue, the next six or eight weeks ought to provide some really interesting accounts of big gas consumptions.

For those undertakings which look to the cooking hours on the Sunday preceding the August Bank Holiday to provide their maximum consumption, and for those in holiday resorts of all kinds, the wish is that they may enjoy a bumper harvest; and it is hoped that they will send along to the "JOURNAL" a full account of their experiences, as an encouragement to those who, not possessing this heavy summer load, may be busy making preparations for the winter season which demands their heaviest output.

The Line of Demarcation

By this time our readers will doubtless have digested the valuable series of articles by Mr. George Evetts, on "The Rationalization of the Gas Industry"—the fourth and concluding article of which series was published in the "JOURNAL" last week. Doubtless, too, many will have noted Mr. Evetts' remarks on the question of multi-part tariffs for gas. It is admitted on all sides, he said, "that the present method of charge is unfair when judged "from any scientific or logical dissection of accounts, and "that the small consumer gets gas too cheaply, being "subsidized by the larger one. Once having conceded "this point, the serious practical difficulty arises that, in "order to maintain the revenue, the price to the small con-"sumer must go up if the price to the large consumer is "to be reduced. Put in another way, having sold gas "at unfair prices for so many years, any attempt at selling "it at the right price will meet with violent opposition "from those consumers who are expected to pay a little "more."

The foregoing, we think, is pessimistic. If the unremunerative customer is penalized, it does not follow that the customer of small income will have to pay more for his gas. The unremunerative consumer is by no means confined to the poorer classes. Investigation would show that many comparatively well-to-do customers who entail a heavy distribution charge burn less gas than do prepayment consumers with half the distribution charge. The point to remember throughout is that the unremunerative customer is defeating the industry's object of good service; he is responsible for higher prices to people who would make greater use of gas if only the charges were a little lower.

On the adoption of multiple-part tariffs, perhaps the first effect might be to lose a few customers. This fact has to be faced. But, as an offset, the encouragement is offered to the other customers to increase their gas usage; and with this increase comes reduction in price. The main aim, then, is to adjust the scale of charges so that the border-line consumer, who is making neither profit nor loss, will become profitable. In other words, the scale must be graduated in small increments. At the same time every device of salesmanship should be concentrated on the small increase in load which means so much. And there is another point. Greater production from the same plant means cheaper production. We can in many instances afford to supply large customers with gas at a very low rate, while actually benefiting the small customers. It does not follow that the price to the small consumer must go up if the price to the large consumer is to be reduced.

Therefore we urge study of the line of demarcation when the small user, after a certain consumption, begins to benefit. To draw this line too high up the scale is to defeat the whole object of the scheme. A modification of this idea was expressed by Mr. J. D. Smith, of Belfast, at the meeting of the Waverley Association of Gas Managers reported in the "JOURNAL" last week. In that city, there are two rates—domestic and industrial—but the latter is treated on a very broad basis. It includes all restaurants, nursing homes, and, in fact, any business or institution where there is anything like a consumption of gas for hot water. It pays Mr. Smith to interpret the application of this rate as he does; and it would pay the industry to be a little more flexible in regard to the line of demarcation.

A Good Investment

IT would probably be no exaggeration to say that, in one way or another, most people are being greatly tried by prevailing financial conditions. Indeed, with the depressed state of trade which finds its expression in terrible unemployment figures and a veritable slide in so many commodity prices, it would be strange that anyone could come through the ordeal unscathed. Even so, the toll taken has varied widely, though, of course, terms of money bear no relation to individual hardship, inasmuch as £1 may mean more to one person than £1000 does to another. But at the moment we are viewing the matter from the point of view of the general investor, who has during the past twelve months been subjected to so many shocks as to make one wonder how long it will be before his confidence can be completely restored. Some of these shocks have been due to bad trade, and others to pure misfortune, but a great proportion—far too great—should have been altogether avoided, or at any rate mitigated. Probably in the "bad trade" category will be placed the Cables and Wireless dividend statement last week, which a contributor to the "Financial Times" describes as "the "worst disaster which has befallen investment, pure and "simple, for several years past."

In times gone by, one spoke of the "sweet simplicity" of Consols; now it is War Loan which may be described as "safe but uninteresting." Our own industry, too, occupies a high position from an investment point of view—a matter to which attention has been drawn on many occasions in these pages. Having in mind the financial vicissitudes of so many investors, we have compared the quotations in the Stock and Share List appearing on p. 47 of last week's "JOURNAL" with that published in the corresponding issue twelve months ago; and the result was on the whole distinctly gratifying. It is true that losses in capital value are by no means absent, but the same remark applies also to gains. And where a falling off in the quotation is shown, it is not of dimensions to cause anxiety to the investor. Nothing in the way of depreciation of individual gas stocks could be placed in the same category with that which has overtaken numberless other avenues of investment. The gas market is a steady one, in which there need be no hesitation in recommending the placing of money by people who are desirous of avoiding those surprises which nowadays seem so much more liable to be unpleasant than pleasant, and who therefore do not wish to turn with a feeling of anxiety each morning to the financial page of their favourite paper. In times like the present, a parcel of gas stock should be most conducive to peace of mind.

Correspondence Classes

MR. R. J. ROGERS, of the Birmingham Gas Department, gives his views on this subject in our columns to-day; and he concludes his observations thus: "I trust . . . that "steps will be taken without further delay to formulate a "correspondence course . . . to be available for students "in the early autumn of this year." Mr. Rogers believes, as we do, that a properly recognized course of gas sales-

manship would meet with success and would have a far-reaching effect on the prosperity of the gas industry.

In justice, the opinions of Mr. Rogers cannot be ignored. For long he has studied the problem through the spectacles of the practical man who knows from wide experience what is wanted, and has imagination and the courage of his convictions to offer a remedy for the ills which he perceives. As far back as 1914 he publicly urged the formation of suitable correspondence classes; and he says to-day that, if in 1914 the "powers that be" had formulated a correspondence course under the ægis of one of the national organizations of the gas industry, the educational status of the rank and file engaged on the supply side of our industry to-day would be of a higher standard than it is, and the industry would have benefited to a very great extent from such trained representatives.

Sufficient has already been said by us and by others to eliminate fear that correspondence courses will spoil the Education Scheme of the Institution of Gas Engineers, and sufficient has already been brought forward in recent correspondence in our columns to point the need for a conference at least of the various interests involved to discuss what action should be taken.

The Gas Industry in the United States

THE following remark was made recently by a City Correspondent in the columns of the "Evening Standard:" "I should not care to venture an opinion whether the "future lies with electricity or gas. Up to the present, "the enormous strides made by the former in recent years "seem, strangely enough, to have synchronized with a "great increase in the use of gas." Without any attempt to urge this particular correspondent to take a risk which he is unwilling to take, the facts may be left to speak for themselves. The quotation, however, reminds the writer of a conversation he had with an American journalist in Berlin a fortnight or so ago, which pointed to the existence of a similar state of affairs on that side of the Atlantic.

In the United States, it seems, the last few years have witnessed enormous growth of the gas industry, largely in consequence of the increased resources of natural gas. Along with this development there has come about a different perception with regard to the gas industry. Great changes have taken place in the ownership of properties, and plans are being made for high-pressure distribution and household heating on a huge scale, which would utilize both natural and manufactured gas. Great regional gas organizations are pictured. Manufactured gas lines are being run 150 to 200 miles from big coke producing plants, and natural gas lines even greater distances. Electricity, it was stated, is an enormous industry in the States, and gas is likely to become comparable with it; and the same men are in it. Consumptions are anticipated in volumes undreamed of in the past. The time is ripe, and one of the most active industries, as well as one of the most changing, is the gas industry.

World Power Conference.

Next week's "JOURNAL" will contain our report of the recent Second Plenary World Power Conference in Berlin. The papers and General Reports of more particular interest to our readers will be summarized; and a number of personal photographs will be included, some of which were taken with the camera of the Editor during his visit.

A Gas Debenture Issue.

As bearing somewhat upon an article appearing in an earlier column of this number, it may be pointed out that the South Metropolitan Gas Company are making an issue of £1,000,000 of 5 p.ct. redeemable debenture stock, and in connection with the offer some striking particulars are given of the Company's position and progress. These statistics serve to stress the point we have already made regarding the soundness of the gas industry from an investment point of view. The Company's area of supply, which covers more than 50 square miles, comprises the major part of the County of London south of the Thames. The number of consumers, now over 420,000, steadily grows, while the sale of gas in the past ten years has increased by 21 p.ct. The Company have a substantial interest in, and furnish gas in bulk to, the South Suburban Gas Company, whose area of supply consists of 174 square miles. Profits available for distribution among the stockholders for the last five years are shown by the accounts certified by the Board of Trade to have been: 1925, £333,364; 1926, £292,624 (coal strike); 1927, £414,351; 1928, £353,207; 1929, £479,313.

Getting on with Gas.

The issue at this particular time of redeemable stock by the South Metropolitan Gas Company—which was, it may be mentioned, a complete success—is of interest from an historical point of view; for the "Evening Standard" print, from their issue dated July 6, 1830, under the title of "Getting on with Gas," the following paragraph: "The South Metropolitan Gas Company are now proceeding with their works in the Old Kent Road. We congratulate the inhabitants of Southwark on the prospect of an adequate gas supply. On the South side of the river at present there is only one Gas Company, against eight on the North side. We see the shares are already at a premium." In the century which has intervened, the South Metropolitan Gas Company have made much history, and, as we see, the undertaking, like another highly popular commodity, is "still going strong."

As Others See Us.

A news item appearing on another page of this issue, headed "Improved Street Lighting by Gas at Smethwick," is extremely gratifying, and will, we hope, be an incentive to others to leave nothing undone which may assist gas to appear at its best in the public thoroughfares. We sometimes feel that the gas industry is apt to be too modest regarding its capabilities and its accomplishments, and there is small room in present-day business for self-effacement. The news from Smethwick recalls a remark made by the "Electrician" when commenting on the recent victory of gas at Lewisham. On that occasion each had a free hand, and the electrical undertaking favoured standards on the footway. The South Metropolitan Gas Company, on the other hand, suspended their lamps centrally above the roadway, and proved the victors. Our contemporary added: "We can depend upon the wideawake gas industry to take full advantage of this success." May this belief prove to be fully justified!

Street Lighting and Accidents.

We are in full agreement with the "Electrician" that much too little attention is paid to the subject of adequate street lighting, and that bad lighting is a frequent cause of accidents. By pressing unceasingly for improved public lighting, the gas industry will be urging a benefit to the community which it is in the best of positions to confer.

Another Gas Merger.

The Directors of the Worthing Gas Light and Coke Company have come to a provisional agreement for the amalgamation of the undertaking with that of the Brighton and Hove General Gas Company. The last-named supplies the whole of Shoreham, Southwick, and Lancing on the west, and the Worthing area of supply embraces the whole of the extended borough and the parishes of Findon and Sompting on the north. The combined area will extend practically from Rottingdean in the east to Goring in the west.

To Encourage Smokeless Houses.

It is stated by Mr. G. W. Keats, Borough Electrical Engineer of Woolwich, that on the Council's housing estate there are hundreds of dwellings unequipped with chimneys or fireplaces, with the exception of one slow combustion stove, and

that this housing scheme has been in progress since 1922. The consumers are charged for the supply on a two-part tariff; the money being collected through a prepayment meter, and by means of weekly rent. While altogether unable to subscribe to the policy of abolishing flues, we do feel that there is something in Mr. Keats's subsequent suggestion that local authorities should give a rebate, in assessing the amount of rates to be paid, in the case of those houses which have done away with the burning of solid fuel, with the exception of coke consumed in a slow combustion stove for hot water. Such persons are saving the purse of the community. Fortunately, however, it is possible to have a smokeless house without its being flueless.

A Princely Gift.

We have already announced that Lord Brotherton of Wakefield, who donated £100,000 to the Leeds University for the erection of a library, has decided to give his own magnificent library to the University, and through them to the Nation. Also, he intends to make arrangements for a special endowment to cover the cost of upkeep of this collection. He laid the foundation stone of the library, which is designed to hold a million books, on Tuesday last week. In the course of the ceremony, the Vice-Chancellor of the University, Dr. J. B. Baillie, said that, through the munificence of Lord Brotherton, the University would in a short time be in the possession of a library building worthy of the highest aspirations of its scholars, its scientists, and its students, adequate to meet the requirements of the complete development of the University in the future, unsurpassed, if not unrivalled, by any similar institution in this country. "The Brotherton Library," he said, "will create a metropolitan temple of knowledge in a great province of England." No university in this country, outside Oxford and Cambridge, has yet such ample accommodation for its central library.

PERSONAL

The Ilkeston Corporation Gas Committee have decided that an expression of the Committee's appreciation of the long and faithful service of Mr. F. C. HUMPHRYS, Assistant Gas Engineer, who retired on July 1, under the provisions of the superannuation scheme, be recorded on the minutes, and that this be communicated to him with best wishes for good health and happiness in his well-earned retirement.

Congratulations and hearty good wishes are extended to Mr. A. D. LACEY, who has been appointed as the new Editor of the South Metropolitan Gas Company's "Co-Partnership Journal." His father, the late Mr. Thomas Lacey, M.Inst.C.E., was Resident Engineer of the Beckton Works of the Gas Light and Coke Company. Both of his grandfathers and also an uncle were in the service of the same Company, in which at the present time two of his brothers hold important positions.

Forthcoming Engagements.

July 11.—MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.
July 16.—BRITISH COMMERCIAL GAS ASSOCIATION.—Meeting of Executive Committee, 28, Grosvenor Gardens, S.W. 1, 11.30 a.m.
July 16.—BRITISH COMMERCIAL GAS ASSOCIATION.—Meeting of General Committee, 28, Grosvenor Gardens, S.W. 1, 2.30 p.m.
July 23.—SOCIETY OF BRITISH GAS INDUSTRIES.—Council meeting in the afternoon.
Aug. 19 and 20.—IRISH ASSOCIATION OF GAS MANAGERS.—Meeting in Dublin.
Sept. 8-11.—ASSOCIATION OF PUBLIC LIGHTING ENGINEERS.—Annual Meeting and Conference at Leicester.
Sept. 11.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual Meeting at Aberdeen.
Sept. 18.—WALES AND MONMOUTHSHIRE DISTRICT INSTITUTION OF GAS ENGINEERS AND MANAGERS.—General Meeting at Porthcawl.
Oct. 10.—MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.—Visit to the Manchester Corporation Gas-Works at Partington.
Oct. 27 to 29.—BRITISH COMMERCIAL GAS ASSOCIATION.

ON THE ELECTRICAL SIDE

Gas in Electricity Works.

It is admitted that the gas industry takes supplies of electricity for power purposes in connection with the manufacture of gas; and in view of the oft-repeated suggestion that the utility of electricity is thereby emphasized, it is with interest that we note, from the Return of Authorized Electricity Supply Undertakings recently published by H.M. Stationery Office for the Electricity Commissioners, that during the twelve months ended March 31, 1929, 2,942,900,000 c.ft. of gas from external sources—*i.e.*, from gas undertakings—was utilized for boiler firing and for gas-engine plant. This compares with 2,521,800,000 c.ft. for the previous financial year.

Co-Partnership.

The gas industry has long been famed as a pioneer of, and as an enthusiastic believer in, the principle of co-partnership; and it is gratifying to find that the electrical industry is proceeding on similar lines. A report of the Highways Committee of the London County Council shows that the City of London Electric Lighting Company adopted a co-partnership scheme which, with certain modifications, was approved by the Electricity Commissioners; and now seven other Companies in the Metropolis have drawn up schemes. Those of the Brompton and Kensington, Charing Cross, Chelsea, Kensington and Knightsbridge, St. James' and Pall Mall, and Westminster Companies were prepared in collaboration, and are practically identical in their main provisions, except in respect of the percentage additions to wages and salaries, which vary in the different cases. The benefits are extended to all permanent employees of the Companies who have completed one year's continuous service. Temporary employees are not entitled to participate without special reason approved by the Directors; but in one case at least the Directors have admitted certain classes of temporary employees. The co-partnership bonus is a percentage addition to normal salaries or wages (exclusive of overtime), varying with the rate of the Company's authorized additional dividend on ordinary shares in excess of the standard dividend for the year, whether the additional dividend is paid to the shareholders or not. The addition in the case of each of the six Companies named in respect of each 1 p.ct. authorized additional dividend varies between 3 and 5 p.ct. A proportionate amount is payable in respect of any fraction of 1 p.ct. of authorized additional dividend. The Notting Hill Company had a co-partnership scheme before the passing of the London Electricity Acts of 1925.

Alleged Electrical Fusion of Gas Pipes.

An interesting point was raised in the Ilford County Court, when an electrical engineer sued the Corporation for damages for negligence. The trouble arose over a fire which occurred in the cellar of the plaintiff's house. There being an electric cable quite close to a gas pipe, it was contended that the cause of the fire was electrical ignition of gas. It was, however, stated by the Deputy Borough Electrical Engineer that he found the cable intact after the fire, though the insulation was a little scorched. Such damage as the cable suffered was, in his view, caused by the passage of electricity from the gas pipe to the cable. The possibility was that the fire had destroyed the insulation of the house wiring, and had caused a leak to the gas pipe. According to the Borough Electrical Engineer, the cable was installed about thirty years ago, and was probably there before the gas pipe. It was possible, in the event of a particular kind of fault, for current to flow along the sheathing of the service cable and leak to the gas pipe; but in that case a section fuse would probably have blown. His Honour said that, though electricity suppliers were under an obligation to keep their cables in good condition, he did not think that they would be entitled to enter a consumer's premises to see if they were in order. His conclusion was that the fire was not connected in any way with the Ilford Council's plant.

Electricity in the Silkworm Industry of Japan.

From a paper submitted to the World Power Conference, it seems that Japan supplies annually 320,000 tons of cocoons—*i.e.*, about 60 p.ct. of the world output of raw silk. Sericulturalists and power suppliers have already carried out jointly numerous tests on the possibilities of applying electricity to this industry for such purposes as cold storage of cocoons, heating during incubation and cooking of the cocoons, maintaining uniform humidity, ventilation during the period in which the silkworms are shedding their skins, and the illumination at night of the mulberry trees for increasing the leaf harvest. Mercury lamp rays are also employed for improving the quality of the cocoon. Since the best time of the year for rearing is from May to October, the sale of current for this purpose is of particular interest to hydro-electric plants, in view of the fact that they have large quantities of water available at this period.

CORRESPONDENCE

Glycerin.

SIR,—I am pleased to learn from your correspondent, Mr. Stokes, how great a measure of agreement has been reached as a result of this correspondence. To recapitulate:

1. In 1928 it was stated, on his behalf, that the study of vapour pressures was unnecessary; this argument is now, presumably, withdrawn.
2. Similarly, temperature conditions must then be immaterial; this also may now be considered withdrawn.
3. If these two considerations, and the existence of the latent heat, are allowed, the argument in my letter of June 11 will hold, and we can agree that the claims put forward for 65 p.ct. and 70 p.ct. removal of water vapour are not justified, on the known figures.

The fact still remains that no substitute has been found for calcium chloride, in respect of water-removing power and effective control thereof. Providence has intervened, as Mr. Stokes surmises, but under the standard rules, whereby it helps only those willing (and able) to help themselves.

CHAS. COOPER, M.Sc.

Whitestone Ironworks and Turnbridge Foundry,
Huddersfield,
July 7, 1930.

Correspondence Classes.

SIR,—The recent correspondence which has appeared in the "JOURNAL," and the reminder by Mr. J. H. Brearley in last week's issue of some remarks of mine in 1923, are sufficient excuse—if excuse be needed—for giving my views of the need for training in Salesmanship in our Industry.

AN OLD PROBLEM.

I have, for very many years, realized that the gas industry was hampered in its fight against competition by a lack of well-trained selesmen. As long ago as May, 1914, at a Midland District Conference of the British Commercial Gas Association, in the course of an address on "Salesmanship in Relation to Increased Gas Sales" [see "JOURNAL" for May 12, 1914], I said:

> Where it is not possible to form classes, and where it is equally important that the principles of gas salesmanship should be properly comprehended, suitable correspondence courses in Salesmanship could, I think, be formulated, which should result in profit both to the individuals concerned and to the industry generally.
>
> Such an organized course of commercial study would, I feel sure, commend itself to many employees engaged in the sales of gas departments of gas undertakings, who perhaps hesitate at present to undergo a course of correspondence tuition on Salesmanship through one of the existing Correspondence Schools, owing to the fact that the essential sales factors as applied to the selling of the particular commodity they are concerned with—viz., town gas—do not receive specialized attention by such Schools.

In the sixteen years which have passed since I wrote the above, conditions in the world in general and in our own industry in particular have altered considerably. The need for a better trained personnel in the gas industry is certainly more urgent to-day than before the war.

LOST OPPORTUNITIES.

If the "powers that be" had formulated a correspondence course under the ægis of one of the national organizations of the gas industry when I suggested it in 1914, I make bold to say that the educational status of the rank and file engaged on the supply side of our industry to-day would be of a higher standard than it is, and that the industry would have benefited to a very great extent from such trained representatives.

GAS COMMERCE DIPLOMA.

Mr. J. H. Brearley refers in his letter in the "JOURNAL" last week to the proposition of Sir Francis Goodenough in 1924, that a Diploma in Gas Commerce might be established. Such a diploma—as foreshadowed by Sir Francis Goodenough—was to be given for study subsequent to that necessary for the Major Gas Supply Course under the Institution's Education Scheme. I suggest that this is not the direction in which the most urgent needs of the industry lie.

EDUCATION SCHEME TO REMAIN UNTOUCHED.

I would rather that the Education Scheme as it exists under the new regulations be given a fair trial without addition or modification. I think that time will prove that most of those young men in the industry whose standard of education enables them to embark on the Scheme will find themselves able to conform to the new regulation. But the Scheme is, I consider, only suited to the needs of those who have a school education up to at least matriculation standard. These only represent a proportion of the men who are to-day in direct touch with the consumer as first-class gasfitters, fittings inspectors, maintenance inspectors, and showroom attendants.

TRAIN THE RANK AND FILE.

In other words, I look to the Education Scheme to train and provide the commissioned officers in the industry's sales army—the class of men who hope to become showroom managers, sales superintendents, or commercial managers.

What I am appealing for is the training of the N.C.O.'s—the real backbone of our selling policy, the men who have to carry out the policy and plan of campaign laid down by their chiefs. There are to-day many hundreds of sound men unfitted by their early training to profit by the Education Scheme, yet quite ready to improve their knowledge so far as their opportunities and abilities allow. These include first-class fitters who have been promoted to foremen's positions, men holding minor positions on the inspecting staffs, and men with mainly clerical training who have to take duty at times as indoor salesmen, while many intelligent gasfitters are only too anxious to fit themselves for better work.

APATHY IN THE INDUSTRY.

I hope to see the proportion of well-trained and well-educated young men on the selling side greatly increase. It is essential that it should increase, but it can only increase as and when the gas industry is willing to offer salaries which will compare favourably with those available to smart salesmen and commercial travellers in other industries. In spite of all that is said and written, there are still too many small and medium-sized undertakings whose service policy is woefully out of date. I know personally of undertakings with makes of four hundred and eight hundred millions per annum who admit that they have not even a first-class gasfitter in their employ. Such undertakings are asking for extinction, and unfortunately they help to prejudice the weight of public opinion against gas.

TEACHING OF GAS SALESMANSHIP.

The most obvious way to get instruction to the many hundreds of supply men is by means of a properly recognized correspondence course.

I do not propose to labour the case for correspondence tuition, but I have personal knowledge of many cases where much real knowledge has been gained by correspondence classes; and I believe that, provided it is enthusiastically backed by the heads of undertakings throughout the country, a really good course on gas salesmanship represents the most practicable method of making a definite improvement in the education of supply men not only in the larger undertakings, but in the medium and the small undertakings as well.

We must remember that there are very many men who have done little or no study for seven or ten years—owing to the more or less routine nature of their work, combined perhaps with an inability to study without supervision, these men have allowed their knowledge of developments in the industry to become out-of-date in all directions outside their own particular job. So we have the man who prides himself upon his knowledge of gas fires yet is woefully behindhand with regard to central heating problems or even the effect of modern architecture and furnishing tendencies upon the future of the gas fire.

Every gas manager must know of many members of his staff who cannot be expected to take up the five years' course, but who would take up and profit by a correspondence course in Gas Salesmanship.

Such a course would not in any way interfere with the existing Education Scheme. The ambitious young man of fair education would still take the professional scheme, but the industry would benefit by a recrudescence of study and thought on the part of the rank and file of its supply staff.

MAKE A START NOW.

Sufficient has already been brought forward in the recent correspondence in the "JOURNAL" to point the need for a conference at least of the various interests involved to discuss what action shall be taken.

It is true that the leaders in the various branches of our industry are busy men. They will no doubt assist to the utmost of their power, but the time has come when definite action must be taken; and men must be found to handle this increasingly important matter.

Although on first thoughts the British Commercial Gas Association would seem the most appropriate body to launch such a course, I see no reason why it should not be successfully undertaken by (say) the Halifax Gas College or a Uni-

versity Correspondence College. What *is* essential is that the course should receive the sanction and blessing of the industry.

CONTROL BY THE GAS INDUSTRY.

Certainly, whatever college is entrusted with the organization and running of the course, it is essential that a small panel of representative men from the sales side of our industry should be empowered to approve the syllabus and advise as to the general standard to be expected from students.

This is evidently what Mr. Arthur Coe had in mind in the concluding paragraph of his letter to you in the "JOURNAL" for June 25, when he said he would be willing that the work should be subject to a reasonable control by a small Council or Board appointed by the Institution.

It would, I suggest, also be desirable for the industry, probably through the Institution of Gas Engineers or the British Commercial Gas Association, to agree to the award or recognition of some diploma or certificate to students on completion of the course. This could be awarded either by examination or by reviewing the quality of work sent in by the student throughout the course.

Once such a properly recognized course of gas salesmanship is launched, I believe it would meet with immediate success and would have a far-reaching effect on the prosperity of the gas industry.

I trust, therefore, that steps will be taken without further delay to formulate a correspondence course on the subject, to be available for students in the early autumn of this year.

R. J. ROGERS.

City of Birmingham Gas Department,
Council House,
Birmingham,
July 8, 1930.

THE NEWS OF THE WEEK

The Electric Light Suddenly Failed at Westminster Abbey on Junt 30, and the service had therefore to be continued by candle-light.

A Reduction in the Price of Gas has been decided upon by the Doncaster Corporation Gas Committee as from Oct. 1, 1930, by ¼d. per therm all round. The scale of prices will then range from 8¾d. (general) and 7¾d. (power) per therm for quantities up to 250 therms per quarter, down to 6¼d. (general) and 5¾d. (power) per therm for quantities of 10,001 therms per quarter and over.

A Report on the More Efficient Lighting of Schools was submitted at a recent meeting of the Rotherham Corporation Gas Committee by the Chairman and Gas Engineer; and it was suggested that the Education Committee should allow the Committee to instal in one of the schools to be selected modern lighting arrangements for a trial period, and that the Gas Department bear the cost of the conversion, provided the Education Committee will undertake the cost of maintenance.

The Provision of Gas Cookers Free for the benefit of the women of the working classes was suggested by Councillor Mrs. M'Coubrey, the only woman member of the Belfast Council. She said that in many working homes the use of a gas cooker was almost impossible owing to the charge imposed. The total cost of supplying such stoves would, in the aggregate, amount to a comparatively small sum. Councillor Hodgen explained that in any houses with a slot meter a gas cooker could be obtained free.

A New Idea in Window Dressing has been instituted by the Swansea Gas Light Company. One of their two windows is at present filled with the usual gas appliances; but the other contains a number of large rental books with a card containing the following words: These books contain the names and addresses of 37,000 users of gas—cookers, circulators, gas engines, geysers, gas irons, washing coppers, radiators. Is your name included? If not, why not? Please walk in and inspect our stock of gas appliances. There is one to suit you.

The Transfer of the Gas Mains in the Whiteabbey area (hitherto the property of the Whiteabbey Flax Spinning Co.) to the Belfast Corporation was made on July 1. The basis of charge for gas for the Whiteabbey area, which is outside the City boundary, is fixed at 4s. 9½d. per 1000 c.ft., less 20 p.ct. discount for accounts paid within one month from the date of furnishing, making the net cost 3s. 10d. per 1000 c.ft.; also 20 c.ft. of gas through slot meters for one penny. The city gas supply has recently been laid to Dundonald, which is also outside the boundary.

The Assisted Wiring Scheme, recommended by the Leeds Corporation Electricity Committee for adoption with a view to effecting co-ordinated action between the Gas and Electricity Departments, has been referred back by the Gas Committee for further consideration. The members having again considered the question, it was decided that, in consequence of the members of both Committees not being able to find a satisfactory formula for the settlement of differences with regard to matters which had arisen in connection with the assisted wiring scheme of the Electricity Committee so far as they affect the gas undertaking, the question be not considered further.

A Royal Sanitary Institute Silver Medal was awarded to the Isle of Thanet Gas Light and Coke Company for their exhibit recently at Margate in connection with the Institute's Annual Conference and Exhibition in that town.

A Reduction in the Price of Gas has been decided upon by the Ripon Corporation Gas Committee. This reduction will take effect from Oct. 1 and will be from 1s. per therm to 11½d. per therm, the discounts to remain as hitherto, and the special rebate to large consumers to be reduced pro-rata.

The Revision of the Current Price of Gas has been considered by the Chelmsford Corporation Gas Committee, together with the effect of the increased price which had been operative since Jan. 1 last, and it was decided that the price be reduced by 3d. per 1000 c.ft., such reduction to take effect as from July 1.

The Annual Fuel Economy Review of the Federation of British Industries has been published. This publication, first started in 1921, is an attempt on the part of the "F.B.I." to secure improved fuel practice by the dissemination of up-to-date information on fuel preparation and utilization. Coal is not only apparently on a permanently higher price level, but further increases are almost certain under the Coal Mines Bill. Fuel cost is, therefore, becoming an increasingly important item in the total production costs; and unless every effort is made to secure the most efficient utilization of fuel, British industry stands to be definitely handicapped in world markets. The Review, which is published at 2s. 6d., is addressed primarily to boiler-house engineers and heating and power executives, and it concerns itself with gas, electricity, and oil, in addition to coal, and also with developments in fuel practice.

New Offices and Showrooms for New Zealand Company.

News has reached us from New Zealand of the completion of the extensions and reconstruction which have been taking place in connection with the premises in Worcester Street of the Christchurch Gas Company, New Zealand. The Company have been able to instal their office staff in commodious new quarters, and reconstruct the buildings with a view to ensuring that the efficiency of the management shall not be impaired by the restrictions imposed by cramped accommodation and promoting better facilities to the Company's customers for inspecting the appliances stocked.

The showroom is panelled in Australian walnut to a height of 8 ft., this being the same timber as that in the construction of the counters, and the ceiling is of fibrous plaster. A new staircase, in walnut, leads to the second storey at the north-east corner of the showroom. This floor is occupied by another showroom and demonstration room, 50 ft. by 23 ft., with stepped gallery. Their construction has brought about the demolition of several walls dividing the floor into a number of small store-rooms. To facilitate demonstrations a stage has been built, and blackboards have been installed. On this floor are also the library, stationery room, and travellers' room. The showroom, demonstration room, and a Board room, 23 ft. by 16 ft., situated on the corner, all have fibrous plaster ceilings.

Improved Street Lighting by Gas at Smethwick.

At the instigation of the Gas Engineer and Manager, Mr. Ernest Hardiker, the Town Council of Smethwick have been experimenting with improved methods of street lighting by gas. The results have been so entirely satisfactory to all concerned that it has been decided to re-light the whole of the main street, some two miles in length, by means of 6-light " Rochester " lamps suspended from the tramway columns at a height of 18 ft. The uniformity of the lighting and the absence of glare have met with great appreciation and praise from motorists.

The improved lighting is being extended to the secondary roads, and the directive lighting system with higher power units has been adopted, which method will gradually replace the existing system in this class of road.

Gas Engineering Scholarships at Leeds University.

The first award of the Cartwright Holmes Scholarship has just been made by the Senate of the University of Leeds on the recommendation of a Committee of the Institution of Gas Engineers. This is a special scholarship instituted by Mr. P. F. Holmes and Mr. D. M. Henshaw as a memorial to the late William Cartwright Holmes, and is intended to secure to a promising entrant to the Gas Engineering profession a scientific training in the Department of Coal Gas and Fuel Industries at the University of Leeds. The award has been made to G. E. Hall, a pupil of the Leeds Grammar School, who matriculated in 1928 with distinction in Physics and Mechanics, and is taking the Higher School Certificate Examination. Apart from purely scholastic attainments, he has been a King's Scout and Troop Leader.

The Corbet-Woodall Scholarship, established for a similar purpose, was awarded to Fred Bell, Assistant Chemist in the Leeds Corporation Gas Department. He was a pupil at the West Leeds High School until 1924, was for a little time an Assistant Chemist with Messrs. Wilsons & Mathieson, and in 1925 went into the service of the Leeds Corporation Gas Department.

Bi-Centenary of a Famous Firm.

In the middle of the sixteenth century, Birmingham was purely an agricultural district, but very shortly afterwards a transition to manufacturing industry commenced, and in the year 1730 the population of smiths, " lorimers," and " naylors," together with skilled artisans of many crafts, was mainly assembled in and around a street of half-timbered Tudor dwellings—nearly all of which contained little workshops—called Digbeth.

It was in the year 1730 that, at No. 11, Digbeth, the first in the line of succession of the firm of W. & T. Avery, Ltd., carried on the business of " stilliard " maker, the " stilliard " or steelyard being at that time the type of weighing instrument in general use. From this small beginning, progress in the improvement and manufacture of weighing equipment by the firm has been gradual and certain.

Because of the ever-increasing growth and expansion of the Avery business, the historic site of Soho Foundry was acquired in the year 1895. This place has been made world-famous by the wonderful engineering triumphs of James Watt, the masterly business acumen of Matthew Boulton, and the marvels of the inventive genius William Murdoch. Soho Foundry exudes a tradition of high endeavour, to which Messrs. Avery have finely responded.

From this historic factory, the whole world is served to-day with an output which embraces the most modern machines for weighing, measuring, counting, and testing the commodities which industry requires and produces. We may mention that in Great Britain there are over 190 Avery Service Depôts distributed throughout the country, at points convenient for service to any user of Avery equipment; and there are Avery organizations equipped for service in practically every civilized country of the world.

The firm celebrated their bi-centenary on Tuesday of last week, when several prominent in the fields of engineering and commerce were invited to inspect the works, and were entertained at luncheon by the Chairman and Directors of the firm, the number of whose employees is now about 10,000.

Once again we were able to renew acquaintance with the cottage where Murdoch lived for several years during his association with Boulton & Watt, and to revisit the first town gasholder. We were also able to visualize the many recent improvements which have been effected in weighing devices and in their methods of manufacture. We were interested to learn that the firm have made a weighbridge to weigh up to 200 tons; and we were interested also to examine their 10-grain balance, which is sensitive to less than one-thousandth of a grain. The firm have supplied the largest testing machine in the world, capacity 1250 tons. On July 1 many attractive demonstrations were staged; particularly fascinating being the " auto-precision " weigher.

Sir J. Fortescue Flannery, Bart., Chairman of the Company, presided at the luncheon.

The toast of " The Old Firm " was given by Sir Walter Raine, J.P., President of the Association of British Chambers of Commerce, who spoke of the history of the firm, their unfailing integrity and courtesy, and the fact that they had a first-class article to sell. Replying, the Chairman said that in no other place was there greater concentration of epoch-marking mechanical developments than at Soho Foundry; and the traditions of Boulton, Watt, and Murdoch were being maintained. He mentioned that the firm of Avery had a machine for recording the weight of the individual trucks of a train while in motion. The toast of " Our Guests " was in the hands of Sir Gilbert C. Vyle, Managing Director of the firm; and response was made by the Right Hon. George Barnes, P.C., and Mr. Alexander Ramsay, Chairman of the Engineering and Allied Employers' Association.

Society of British Gas Industries.

A Meeting of the Council was held at 56, Victoria Street, Westminster, S.W. 1, on June 27—Mr. Frank West, the Chairman, presiding. Those present were: Mr. D. M. Gibb (Vice-Chairman), Messrs. C. A. Goodall, Leonard Hartley, W. H. Handley, D. W. Turner, A. B. Balmford, T. O. Wilton, R. B. Hodgson, Ernest West, C. R. F. Threlfall, B. B. Waller, E. J. Davison (Hon. Secretary), F. J. Gould (Hon. Treasurer), W. J. D. Howell, H. M. Thornton, H. E. Bennet, and G. Ewart, Dr. E. W. Smith, Col. E. A. Wilson, and Mr. A. L. Griffith (Secretary). Apologies for absence were reported from Messrs. T. A. Clapham, E. J. Fox, R. J. Milbourne, and F. C. Tilley.

The Chairman extended a hearty welcome to the new Members of the Council.

The Chairman, on behalf of the members, expressed hearty congratulations to Dr. E. W. Smith on his appointment by the King as a Commander of the Order of the British Empire.

The Hon. Secretary reported the meeting of the Special Committee of the Federation of British Industries in reference to the Consumers' Council Bill, on which the Society is represented. As the Bill has been withdrawn for this Session, nothing further is likely to be done at present.

An application for membership was submitted from Messrs. John Harper & Co., Ltd., of Willenhall; and they were unanimously elected members of the Society under Section VI.

Nominations on Committees.

National Gas Council, Joint Advisory Committee.—Mr. H. M. Thornton and Mr. W. J. D. Howell were appointed two of the Society's representatives on this Committee, in place of Alderman George Clark and Mr. Samuel Cutler.

British Commercial Gas Association.—Mr. D. M. Gibb was nominated a member of the Executive Committee in place of Mr. R. J. Milbourne. Mr. D. M. Gibb was nominated a member of the General Committee in place of Mr. F. J. Gould. The Chairman was nominated a Vice-President of the Association.

Emergency Committee.—Mr. D. M. Gibb was appointed a member of the Committee, in place of Mr. R. J. Milbourne.

New Holder Opened at Walsall.

A new gasholder which has cost about £19,000 has been opened at the Pleck Works of the Walsall Corporation Gas Undertaking by the Mayor (Alderman E. H. Ingram).

The new holder has a capacity of 2 million c.ft., as compared with 1½ millions in the former one. It has been erected by Messrs. C. & W. Walker, Ltd., of Donnington.

Alderman J. A. Leckie (former Chairman of the undertaking) said the new gasholder contained 650 tons of steel, 120 tons of cast iron, and 960,000 rivets, and rested in a tank containing 127,000 tons of water. The increased pressure would enable gas to be distributed more satisfactorily over the borough.

The Mayor mentioned that a municipal gas supply was started in Walsall 104 years ago. It had proved a very successful undertaking; but recent years had been difficult and were accentuated by the coal dispute in 1926. The Mayor said he considered too much had been drawn from the undertaking for the benefit of the rates, and the new policy would be for the Corporation to supply commodities at the cheapest possible price and leave the Corporation to finance the various social services out of its own resources. He considered that in the long run this policy would be to the benefit of the trade of the town.

Later, tea was served at the Walsall Council House, where Councillor W. Dean (the new Chairman of the Gas Committee)

THE NEWS—*continued.*

thanked the Mayor and said he hoped that the new policy would enable the Gas Committee to reduce charges all round.

In Walsall last year they sent out the record amount of 761 million c.ft. of gas, as against 749 million c.ft. in 1928 which was the previous record.

Congratulations were extended to the builders of the new holder, and Mr. G. F. H. Beard, General Manager of Messrs. C. & W. Walker, Ltd., complimented the Walsall Gas Engineer (Mr. Fred Davies) on the skill with which he had drawn up the specifications.

Returning thanks, Mr. Davies said that when the gas accounts for the past year were issued it would be seen that to make a net profit of £10,000 the Department had to make a gross profit of £53,000. Now, however, their finances had been put in order, and seeing that their production costs were lower than in any other Midland town there was no reason why they should not have a low selling price.

A silver salver was presented to the Mayor as a souvenir of the occasion.

Birmingham Gas Department Extensions.

The Birmingham City Council have approved the report of the Gas Committee in which was a resolution for the erection and equipment of a central depôt required for the fittings section, offices for clerical staff, and accommodation for fitters and maintenance attendants at Lord Street at a cost of £200,000.

Ald. J. H. Lloyd, Chairman of the Committee, stated that the number of consumers was increasing by thousands each year. The accommodation which was considered adequate in the past for stores and workshops of the fittings section was now totally inadequate. In 1912 the number of consumers supplied was 158,034, and to-day the figure was 267,829. By the erection of the new central depôt difficulties of supervision and administration would be relieved; there would be a saving in costs and costly double-handling would be avoided.

On the adoption of the report, Ald. Lloyd told the Council that the total expenditure on revenue account had increased by £52,099 over the previous year. The total sales of gas exceeded 14,315 million c.ft., an increase of 369 million c.ft., which constituted a record; and the cost of manufacture had nevertheless been reduced by £31,329.

Councillors Shurmer and Miss Wilson warmly congratulated the Department upon their successful work in supplying gas for courtyards and terrace property. Reference was made by Mr. Griffiths to the efficient services of the General Manager (Mr. A. W. Smith), and Ald. Lloyd, in reply, pointed out that the Gas Committee and the whole gas industry appreciated his work. The Corporation were fortunate in having his services.

The L.C.C. and Gas Poisoning.

Dealing with the report of the Departmental Committee on deaths from gas poisoning, the London County Council General Purposes Committee state that they have consulted the committees concerned in the matter. The Highways Committee has no observations to offer from a purely engineering point of view. No recommendation is made in the report which would affect the Council in so far as they are a highway authority. It is pointed out that leakages of coal gas into the tramway cable manholes and feeder pillars are not infrequent, but that every care is exercised to prevent employees from entering manholes before tests for gas have been carried out and thorough ventilation provided when necessary. When a leakage of coal gas is suspected, it is immediately reported by telephone to the gas company concerned, and the report confirmed by letter. These precautions have proved adequate, and no employee working in a tramway manhole has been injured by coal gas or gas explosion.

The Building Acts Committee state that the only recommendations made by the Departmental Committee which appear to have any bearing on matters dealt with by the London Building Act, 1894, appear to be those as to holes in walls and fixing of geysers. These recommendations appear to be reasonable, but with regard to holes in walls, unless the work involved is such as to require the giving of a notice to the district surveyor under section 145 of the Act, the Council have no power of control. It is certainly questionable whether notice could be required to be given in a case in which the only work involved is the cutting away of brick for the purpose of passing gas pipes through a wall. There is nothing in the Act which would enable the Council to require the works specified in regard to geysers to be carried out. The requirements in the Act for the ventilation of domestic buildings and habitable rooms in basements are limited to the height of rooms, size and position of windows, and the provision of open space about buildings, and there is no requirement that flues shall be provided, although the Act contains somewhat stringent regulations with regard to their construction when provided.

The Buildings Acts Committee have already noted for consideration, in connection with any future amendments of the London Buildings Acts, the general question of the ventilation of bathrooms, which are not "habitable rooms" as defined in the Act.

Gas at a Colchester Exhibition.

The supremacy of gas for cooking and for other purposes is demonstrated at the Empire (Home and Overseas) Exhibition at present being held at Colchester. A Civic and Empire Week and Carnival is being held in connection with the exhibition, which may aptly be described as an Essex Wembley.

Mr. J. H. Thomas, M.P., Secretary of State for the Dominions, and Chairman of the Empire Marketing Board, inaugurated the week by opening the exhibition, the first to be held in the Eastern Counties.

Exhibits from all parts of the Empire were displayed there, laid out in a gigantic marquee, the biggest, we understand, ever erected in this country. The Empire Marketing Board was largely responsible for the display, and with it were associated the Department of Overseas Trade, the Ministry of Agriculture, and the Governments of several of the Dominions and Colonies.

In addition to the individual displays of the Dominions and Colonies, the Empire Marketing Board has one of its famous demonstration kitchens at work, and in this gas is exclusively used for cooking and water heating. Expert cooks demonstrate how very attractively Empire products may be prepared for the table, and also how Empire products are within the reach and means of everybody in the land. The caterer at the exhibition is also using gas for cooking and water heating.

One of the chief and most interesting stands is that of the Colchester Gas Company, which will be described in the next issue of the "Salesman." Occupying a prominent place in the exhibition, it is attracting a great deal of attention. The exhibit, which has been remarkably well planned, includes a series of model rooms equipped with up-to-date gas fittings and appliances.

Corporation Undertakings' Results for 1929-30.

Bolton.

The gross profit for the year is £46,592, of which £6035 has been allocated as revenue contributions to capital, and £10,000 has been transferred to the renewals fund. Out of the renewals fund £12,728 has been expended during the year, leaving a balance of £35,510. The prices received for tar have shown a further drop since the last report, while the value of the ammoniacal liquor sold is less than the cost of working it up to a saleable commodity. These two items account for a reduction in income of £4739, and when compared with the receipts a few years ago indicate the additional charges which must be borne by the price of gas. Unfortunately, Bolton is now suffering more severely from the trade depression, general throughout the country, and despite an increase of nearly 3000 in the number of gas appliances supplied and fixed during the year the quantity of gas used by industrial consumers has fallen off, resulting in a slight reduction in the total quantity of gas sold.

In order to complete certain necessary work at the Gas Street Station, it was found advisable to run the Lum Street Works for a few months during the summer. The efficiency at the Lum Street Works, owing to a long spell of work without overhaul, is lower than Gas Street, and this is reflected in the balance-sheet. Advantage is being taken during the coming year to carry out necessary repairs to the Lum Street Works. The Gas Street Works successfully carried the winter load, and the results so far are eminently satisfactory.

Bradford.

The financial statement, as prepared and presented by the City Treasurer, shows that the gross income for the year amounted to £461,636 and the gross expenditure to £370,311, showing a gross profit of £91,325; and after providing for net revenue charges, there is a net profit on the year's working of £20,710. The amount received for gas was £322,110, or £14,295 less than the previous year. The total sales of gas for the year were 1,988,232,000 c.ft., as compared with 2,005,949,000 c.ft. in 1929—a decrease of 0·88 p.ct. The un-

accounted-for gas has decreased by 1·42 p.ct. During the period the sales of 249 cookers, 137 fires, 4 boilers, 6 radiators, and numerous smaller items were concluded.

Burnley.

The financial result of the year's working is a gross profit of £44,887 and a net profit of £6114 after due payment of capital charges. The total expenditure during the year has been £160,727, against £150,478 during the year 1928-9, and the income has been £166,841 against £169,462 the previous year. The maximum price of gas throughout the year to ordinary consumers within and without the borough has been 7d. per therm, with scale reductions to domestic consumers to 5d. per therm.

Work was commenced on the laying of the connecting main, 11,440 yards in length, from Altham Coke Ovens to Oswald Street Gas-Works on June 24, 1929, the work being satisfactorily completed, subject to reinstatements, on March 31 last. This main is of 10 in. diameter, constructed partly of cast-iron, and partly of steel with welded joints, laid above ground for a distance of 5079 yards of its length. For a distance of 6200 yards the main traverses the route of the L.M. & S. Railway from Huncoat Station to Cog Lane, Burnley. The gas was turned on at the Altham Colliery, without any hitch in the proceedings, on April 17, and up to date the supply of 1½ million c.ft. per day has been perfectly continuous and in accordance with the quality prescribed by the contract. The main is designed to carry, if required, a quantity of 3 million c.ft. per day. In connection with this scheme the Department have installed a carburetted water gas plant of 1½ million c.ft. capacity. This, in conjunction with the surplus capacity of No. 1 water gas plant, will provide an adequate stand-by in the event of a failure of the coke oven gas supply occurring even at the maximum period of consumption in winter.

The make of gas during the year has been 1,014,215,000 c.ft., compared with 1,006,127,000 c.ft. made during the previous year, being an increase of 0·8 p.ct. Of this quantity 911,150,000 c.ft. of coal gas, and 59,481,000 c.ft. of carburetted water gas were manufactured at the Oswald Street Works. The gas sent out has been 1,013,343,000 c.ft. against 1,005,836,000 c.ft. during the previous year—an increase of 0·74 p.ct. The net receipts for residuals, after deduction of expenses in the working up of the bye-products, are £31,642 compared with £27,450 the previous year.

Carlisle.

After providing for income-tax, interest, loans repayment, &c., there is a net loss of £322, as against a net profit of £1199 for the preceding year. The principal factors which have contributed to bring about this deficiency are the considerable fall in the prices of tar and sulphate of ammonia; the starting of the year with about £1500 less revenue to come in for the sale of gas, due to reduction in price in previous year; the payment of over £4000 extra for rates, owing to the recent formidable increase in the assessment of the undertaking. But for having to face the last two items, amounting together to £5500, the Committee should have finished the year with a very useful profit.

Chelmsford.

Mr. F. N. Howes, Engineer and Manager of the Chelmsford Corporation Gas Undertaking, in his annual report, states that the financial result of the year's working is a gross profit of £13,278, leaving, after due payment of loan and other charges, a net profit amounting to £313. This has been made possible by the increase in the price of gas of 6d. per 1000 c.ft. from Jan. 1, 1930. Gas sales have shown a favourable increase due to the growth of the town. The average cost of coal has been 33s. 6d., which is equal to that of the preceding year. The makes of coke, tar, and ammonia have been good, but the return from tar has been disappointing. The manufacture of sulphate of ammonia again entails a loss, and the question of an alternative method of disposing of ammonia is under consideration.

Manchester.

The annual report of the Manchester Corporation Gas Undertaking for the year ended March 31 states that the net surplus was £75,285. The quantity of gas sold was 7,194,936,000 c.ft., an increase of 0·75 p.ct. as compared with the previous year. The average price was 3s. 5·43d. per 1000 c.ft. as compared with 3s. 5·46d. for the previous year. The income from coke shows an increase of £5312 as compared with the previous year, notwithstanding the continued keen competition from furnace coke. The demand for suitably graded coke for domestic use is still increasing, 530,000 bags containing 1 cwt. each, having been delivered during the year, as compared with 420,000 bags in 1929. The total income from tar has been reduced by £15,614.

During the year 5047 cookers were sold or fixed on simple hire as compared with 3337 last year. On the other hand, the number of standard cookers let out free was 1496 as against 4474 for the previous year. The demand for wash-boilers continues to be satisfactory, 3191 having been fixed during the year. The number of approved applications to be placed on the reduced scale of prices applicable for gas used for manufacturing, &c., purposes, received up to March 31 last was 2697, in respect of which the consumption was 1,170,549,000 c.ft., or 16·27 p.ct. of the total sales.

Smethwick.

A substantial advance in the gas production per ton of coal has been made in consequence of improvements effected to the plant, coupled with diligent research particularly with regard to carbonization which has been the subject of experiments of an interesting nature. A gas yield of 18,536 c.ft. per ton has now been realized, which is equivalent to an increase of 917 c.ft. over that of the previous year, and discounts all previous records. By comparison with the results obtained in the year with those of 1920, there is a saving in the amount of coal used equivalent to £25,232 by reason of the improvements indicated.

There is an increase in the sales of gas amounting to 2·45 p.ct., and the further development of sales is occupying the close attention of the Committee. The number of consumers has increased by 862 during the year.

The net revenue from sales of gas was £134,360—an increase of £3882 on the previous year's figures. The total quantity of gas sold and accounted for was 888,296,200 c.ft.—an increase of 21,284,500 c.ft., or 2·455 p.ct. as compared with the previous year.

Of the balance of £11,143 brought forward at the commencement of the year £8500 was transferred to the reserve fund account, and £2802 has been spent on specific items in accordance with the Committee's resolution. A further sum of £3500 has been appropriated out of the profits of the year for vertical retort renewals being the first of four instalments. There is now an available balance of £6375.

Stoke-on-Trent.

The total quantity of gas manufactured, all of which was produced on the plant at the Etruria Works, was as follows:

	C.Ft.	P.Ct. of Total.
Vertical retorts	1,271,920,000	75·93
Horizontal ,,	292,785,000	17·48
C.W.G. plant	110,300,000	6·59
		100·00

	Therms.	
A total of	1,675,005,000 = 7,872,523·5	1930
As compared with	1,652,263,000 = 7,765,636·1	1929
An increase of	22,742,000 = 106,887·4 or 1·38 p.ct.	

The quantity of coal carbonized was 73,813 tons in vertical retorts and 24,482 tons in horizontal retorts—a total of 98,295 tons, as compared with 98,944 tons last year, showing a decrease of 649 tons despite the fact that nearly 23 million c.ft. more gas was produced during the year. The percentage of water gas made on the total quantity of gas manufactured was 6·59 p.ct., being nearly 3 p.ct. less this year, principally on account of the extra simultaneously manufactured with the coal gas in the vertical retorts.

During the year contracts were placed with local firms for the supply of cast-iron and steel plates, tubes, &c., required in connection with the new air cooled condensers which are being erected by the Department's own staff. The work of erection is nearing completion and it is hoped to have these condensers in operation in the near future. The quantity of sulphate of ammonia made was 857 tons as against 832 tons last year, while the quantity of tar distilled was 1,391,683 gallons as against 696,800 gallons in the previous year, being an increase of nearly 100 p.ct., the stocks of tar having been largely reduced during the year under review. It is gratifying to report an increase in the total number of consumers, which is now 56,958 as against 55,501—an increase of 1457.

The net credit balance is £5942 and with a sum of £157 refunded by an adjoining Local Authority on account of their over-assessing a high-pressure main, makes the total net credit balance £6099 to be transferred to the Reserve Account.

Workington.

The gas produced during the year amounted to 180,857,000 c.ft., which shows a slight decrease of 0·57 p.ct. compared with the previous year. The gas produced per ton of coal carbonized was 20,662 c.ft., equivalent to 88.7 therms; the gas sold per ton of coal carbonized being 19,263 c.ft. or 82·7 therms. These figures are the highest recorded in the history of the Undertaking.

The following new gas appliances have been supplied by the Gas Distribution Department during the year: Cookers, 132; gas fires and radiators, 68; wash-boilers, 62; miscellaneous appliances, 206.

Of the total gas registered by meters 46·07 p.ct. was supplied through ordinary meters and 53·93 p.ct. through prepayment meters. The average annual consumption per ordinary meter was 37,392 c.ft., and the average per prepayment meter 18,105 c.ft.

LORD MAYOR VISITS BOW

To Inaugurate Gas Light and Coke Company's Extensions

At the Bow Common Works of the Gas Light and Coke Company on Monday of last week, a distinguished gathering awaited the arrival of the Right Hon. Sir William Waterlow, K.B.E., J.P., the Lord Mayor of London, who was accompanied by the Lady Mayoress. The occasion was the opening of the reconstructed works; and the Lord Mayor and the Sheriffs of London arrived in full state, to be received by the Governor of the Company, Sir David Milne-Watson, LL.D., D.L., who was accompanied by Lady Milne-Watson.

The Bow Common Works, which have been reconstructed on up-to-date lines since 1926, were originally built for the Great Central Gas Consumers Company, and were acquired as the result of one of the early amalgamations. They are remarkable in that they were, and are, situated in an area supplied by another Company—the Commercial Gas Company—so that the gas has to be conveyed into the Gas Light and Coke Company's area through a system of high-pressure mains. The works, even as reconstructed with a greatly increased output, can make only 4½ p.ct. of the total gas made by the Company.

It was fitting that the Lord Mayor should perform the inauguration ceremony. The foundation stone of the original works was laid in 1851, and two years later the finished works were officially opened by the Rt. Hon. Thomas Challis, M.P., Lord Mayor of London, accompanied by the Sheriffs of London and Middlesex, and a number of prominent city merchants. The working of the plant was on that occasion described to the company assembled by the Works Engineer, Mr. Sheriff Croll, whose portrait now hangs in the Engineer's Office.

1926-1930.

At the time the works came into the possession of the Gas Light and Coke Company, the annual output was 465 million c.ft. There were then two retort houses containing inclined retorts. Manufacturing results were exceedingly good; the therm yield being in the neighbourhood of 73 per ton of coal. In consequence of the works having no connection to river or canal, all coal is delivered by rail, and is generally obtained from Yorkshire and the Midlands. The benches were respectively 32 and 25 years old, and, in spite of the results then being obtained, were in such a condition as to demand major renewals. It was decided to remodel the works entirely, and effect reduction in certain of the operating charges, which were above the average of the other stations.

With the inclined retorts the daily output of coal gas was 5·5 million c.ft., which, together with the carburetted water gas plant, produced a total output of 8 million c.ft. per day. As now reconstructed the output is made up of coal gas from vertical retorts, 8 million c.ft., and carburetted water gas 2·5 million c.ft.—a total output of 10·5 million c.ft. per day (500 B.Th.U.).

The reconstructed plant, together with gasholder storage of nearly 4,500,000 c.ft., coal storage equal to 30 days' maximum consumption, 14 days' coke storage, Engineer's residence, and all the usual appurtenances of a gas-works, occupies 9·5 acres.

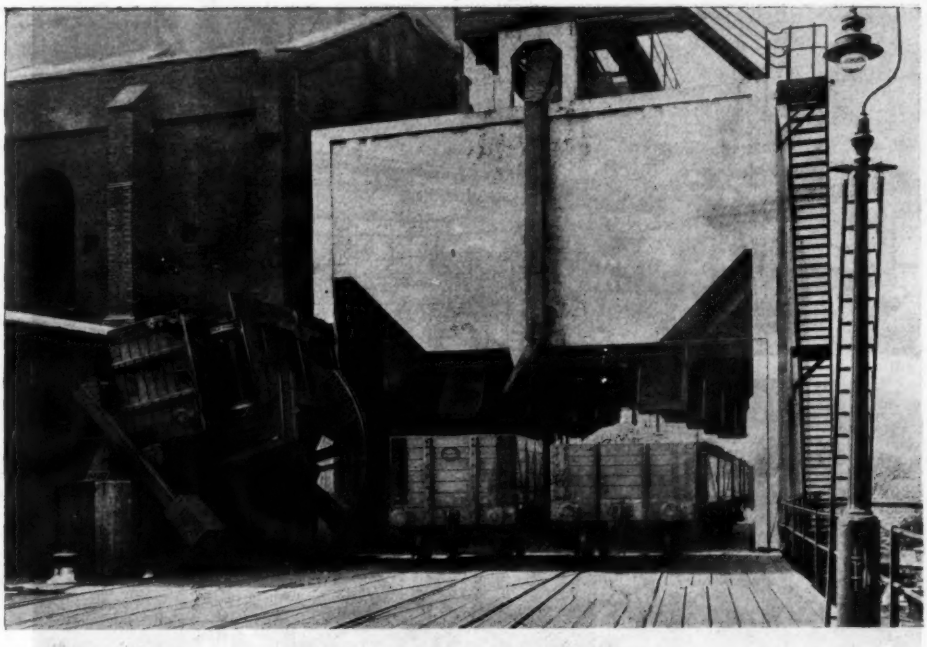
All the carbonizing plant has been concentrated in a portion of one house, 213 ft. in length—the remainder of the house being used for a stores on the ground level, while lobbies and bathrooms have been constructed above. The second retort house has been demolished to make room for further coal storage, and an additional section of purifiers has been erected. The carburetted water gas plant, which consists of two Humphreys & Glasgow sets, each 1¼ million c.ft. capacity, was erected in 1919-20, and remains untouched, as also do the main Lancashire boilers. Much of the washing, purification, and naphthalene extraction plants were in first-class condition, and needed no renewal. The exhauster room has been entirely remodelled, electrical plant has been added to the works equipment, and cooling plant for circulating water has been installed.

Carbonizing Plant.

The carbonizing plant consists of an installation of Woodall-Duckham vertical retorts in two benches, each of 34 retorts. The retorts are 25½ ft. long, rectangular in section, 78 in. by 10 in. at the top and 82 in. by 18 in. at the base. Each retort is capable of dealing with 8·3 tons of Yorkshire coal in 24 hours, and the carbonizing capacity of the plant is 532 tons daily, from which a yield of 8,170,000 c.ft., or 42,028 therms,

THE LORD AND LADY MAYORESS INSPECTING THE WORKS.

In the background is a Whessoe washer-scrubber of 6½ million c.ft. capacity daily installed in 1924—the first of three erected at these works.



ROTARY TIPPLER AND COKE LOADING PLANT.

of 515 B.Th.U. gas is obtained. The make of gas per ton is thus 15,350 c.ft., and the therms are approximately 79 per ton of coal carbonized.

The heating of the retorts is carried out by two batteries each containing five producers erected independently of the retort bench at one side of the retort house and feeding the settings by a common producer gas main running the length of the benches.

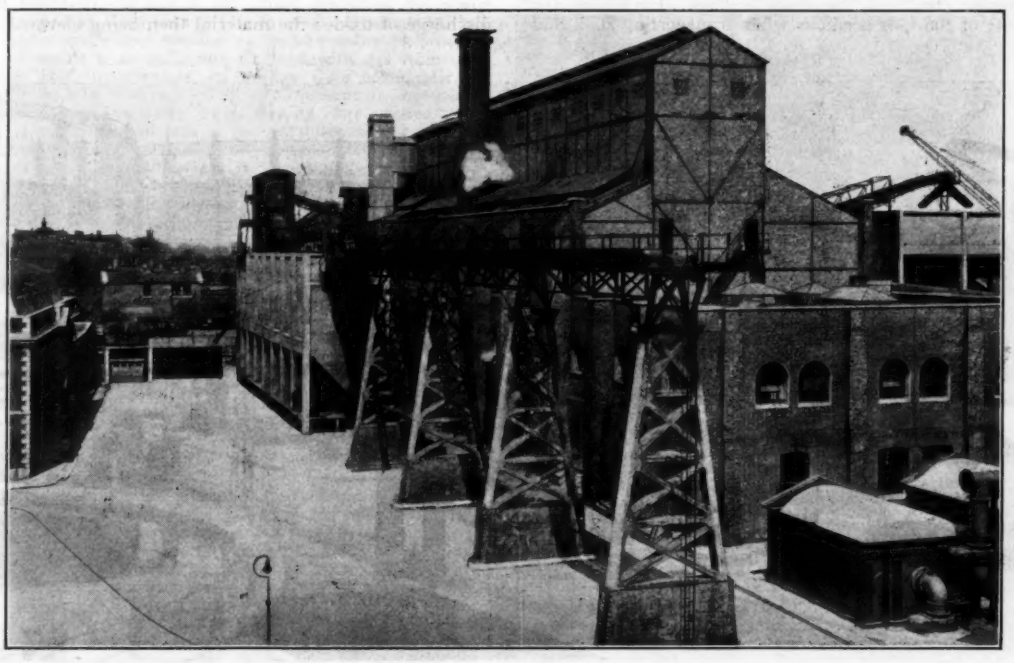
No regenerators are installed, but there are three waste-heat boilers. Two of these are normally in action, leaving the third as a stand-by, so that a full output of steam is always assured during periods of cleaning or repairs to one of the boilers. The consumption of fuel is 2·8 cwt. of cold coke per ton of coal carbonized, while the water evaporation from the boilers is 4·67 lbs. (from and at 212° Fahr.) per lb. of producer fuel. After allowing for the steam used by the turbines driving the induced draught fans, the net output of steam at 130 lbs. per sq. in. and 500° Fahr. is 31,800 lbs. per hour, which is equal to 1430 lbs. per ton of coal carbonized.

The area occupied by the new carbonizing plant is now 13,420 sq. ft., giving an output of 617 c.ft., or 3·18 therms per sq. ft. of ground space, which compares with 212·8 c.ft. and 1·15 therms of the inclined retorts previously installed in this retort house.

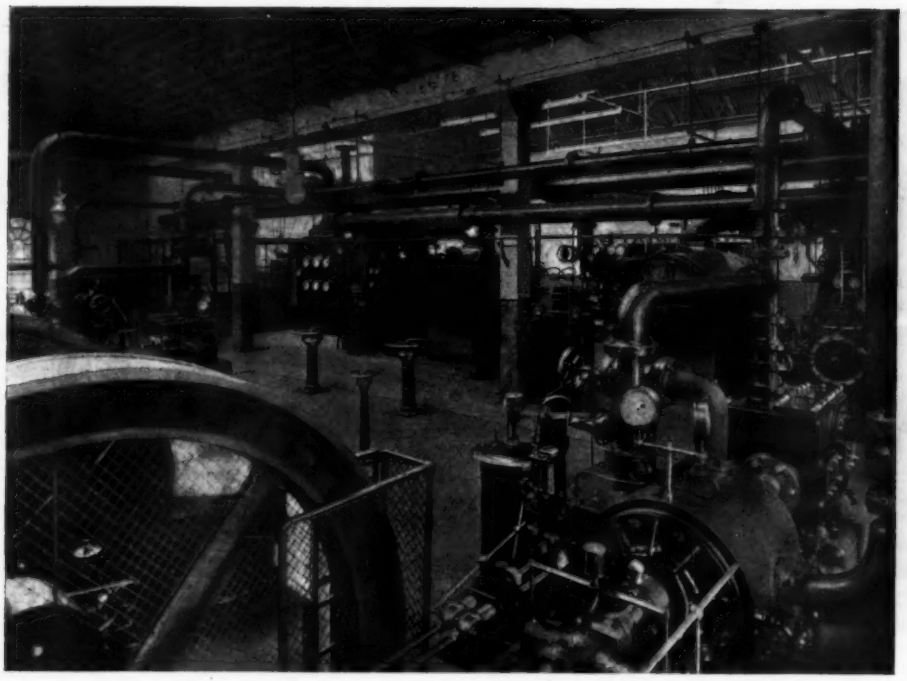
One of the principal objects aimed at in the reconstruction was to secure the maximum benefits from the mechanical handling of coal and coke. The arrangements for the reception, unloading, and storage of coal, and for the transport of coke to consumers' rail and road vehicles and for works use form, together with the conveyors of the vertical retort plant, a complete scheme for each material.

Coal and Coke Handling Plant.

The works are directly connected to a branch of the London and North-Eastern Railway. The railway line is constructed upon arches, and passes the works at a height of approximately 13 ft. above the yard level. In the works, before remodelling, the coal trucks as received were drawn over a timber viaduct to the end of No. 1 House by means of hydraulic capstans, where an end tipper discharged the trucks into the retort house coal breakers. Coal for storage was unloaded by the two hydraulic cranes of 70 tons per hour capacity each, which are elevated on brickwork pedestals situated near the commencement of the



GENERAL VIEW OF THE RETORT HOUSE AND COKE CONVEYING PLANT.



EXHAUSTER AND POWER PLANT HOUSE.

viaduct sidings. The hydraulic pressure supplied to these cranes is 730 lbs. per sq. in.

In the reconstruction scheme the same general method has been adopted. The hydraulic cranes and the capstans have been retained for storage, and a third crane has been added. Storage room for 15,000 tons of coal is now available around the pedestals of the cranes. The old timber viaduct has been extended by the addition of another line of track, which, together with the whole of the renewed portion of the viaduct in the neighbourhood of the tippler and the retort house, has been constructed in reinforced concrete. The sidings are now arranged to give room for receiving and manipulating a full train of coal trucks while an empty coal train and a reasonable number of coke trucks are also on the rails.

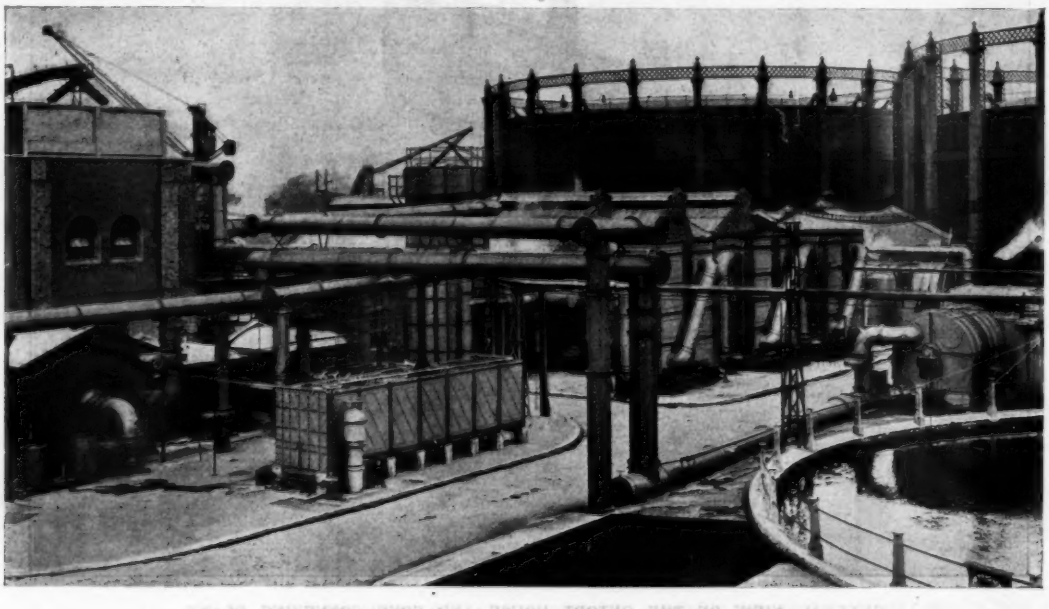
The coal trucks are unloaded by a Mitchell tippler having a capacity of 12 trucks per hour, each holding 12 tons of coal. The tippler discharges in a steel receiving hopper of 50 tons capacity. From this point the coal-handling plant is in duplicate. There are two single-roll breakers and two bucket elevators of 105 ft. centres. Each has a capacity of 100 tons per hour, and discharges into either of two small horizontal traverses arranged in the rising end of each of two gravity bucket conveyors encircling the retort benches. Each conveyor has a capacity of 100 tons per hour when transporting coal, and can be used independently or simultaneously for coal and coke. The coal, after a short vertical rise, passes horizontally along the length of the house, and is tipped into the bunkers, which have a capacity equal to 48 hours' demand of the vertical plant.

The gravity bucket conveyors encircling the bench receive the coke discharged from the retorts, and deliver it into subsidiary conveyors for: Storage and road traffic; rail traffic; water gas plant, and fuel-fired boilers.

For the general road traffic and heap storage the coke is tipped from the gravity bucket conveyors at the small horizontal traverses previously mentioned just before the point of coal entry, and passes when required through cutters of 50 tons per hour capacity on to a rubber belt conveyor. Throughout the installation the coke handling is done by similar rubber belt conveyors. Harris vibrator screens of Messrs. Jenkins' manufacture are placed at the head of the reinforced concrete storage bunkers.

Reinforced Concrete Purifiers.

The new purifiers are almost entirely of reinforced concrete construction, and are fitted with a simple and efficient oxide handling plant. To effect the maximum economy in ground space for purifying plant, the boxes are designed for bottom discharge of oxide; the material then being elevated to the flat

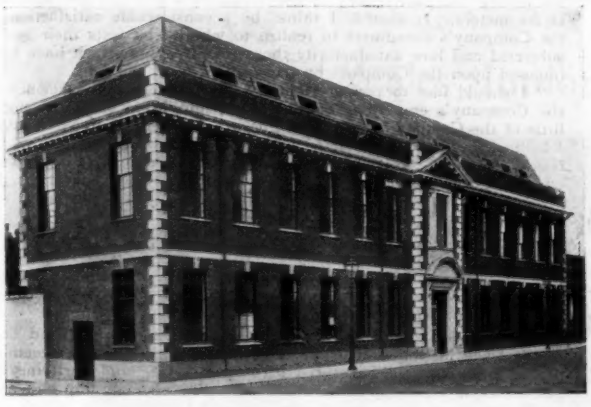


CONDENSERS. WASHERS, STATION METER, AND GASHOLDERS.

roof of the plant, which forms the revivifying floor. The installation is fitted with an automatic skip hoist, by means of which the oxide is loaded, elevated, and discharged, and the empty skip returned continuously without the attention of an operator.

Practically the whole of the power used on the works, either directly or indirectly, is derived from the waste-heat boilers.

The gas, after leaving the station meters, is freed from naphthalene while a "Dri-Gas" plant is now being erected for the extraction of water vapour.



New Offices.

The administration of the works and the chemical control is carried out from the new office buildings, which have been designed by Mr. Walter Tapper, A.R.A., P.P.R.I.B.A. The new building also includes a dining room, kitchen, and meeting or social room on the top floor, and a fully appointed ambulance room, where first aid can be rendered.

Following an inspection of the works, during the course of which the Lord Mayor declared them open, those present, who included many men prominent in the gas industry, were entertained at luncheon by the Governor and Directors of the Gas Light and Coke Company.

A Glimpse into the Past.

Sir David Milne-Watson said that he had much pleasure, on behalf of his colleagues and himself, in welcoming the Lord Mayor that day on the occasion of the opening of their reconstructed works. It gave them, too, special pleasure that the Lady Mayoress had been able to be present, and they welcomed her, and the other ladies, all the more heartily because of the intimate connection that existed between gas and the home. Seated as they were that day on the site of a works fully eighty years old, they might, he thought, for a moment allow their minds to wander back into the past history of a great industry. The Gas Light and Coke Company owed its origin to a Charter granted by King George III. in 1812. Although in the original Bill, under which the Company was to be constituted, powers were sought to enable it to illuminate England with gas from the Thames to the Tees, nevertheless, its origins were comparatively modest, and the area lit was very small. The present arrangement, by which the advantages of larger scale working were secured to a population of 4½ millions in an area of 460 sq. miles, was the result of a policy of amalgamations pursued during the past sixty years.

The works at Bow Common, which had been undergoing reconstruction on up-to-date lines since 1926, were originally built by the Great Central Gas Consumers' Company, and were acquired by the Gas Light and Coke Company in 1869-70, as the result of one of the early amalgamations. The Great Central Gas Consumers' Company was formed in the early 'fifties, and opened the works in July, 1853. The opening ceremony, as a contemporary account told them, was performed by the then Lord Mayor, the Right Hon. Thomas Challis, M.P., the Sheriffs of London and Middlesex, several Members of Parliament, and a considerable number of merchants and others connected with the City—the gas from the works being at that date largely consumed in the City of London. Moreover, the Engineer and Manager of the Great Central Gas Consumers' Company was Mr. Sheriff Croll; and that was, no doubt, how an intimate connection arose, and had always been maintained, between those works and the City of London. A portrait of Mr. Sheriff Croll still hung in the Engineer's Office at these works, and a portrait of Sir Thomas Dakin, Lord Mayor of London in 1871, and for many years Chairman of that Company, was in the Boardroom at Westminster.

In these circumstances, it was the desire of his colleagues and himself that they should endeavour to maintain the happy connection which had always existed between the City of London and the Gas Light and Coke Company, by asking the Chief Magistrate of that great City to re-open those works that day. He also welcomed the Chairman of the London County Council, the major part of whose area was supplied by the Company's gas. The Council, and their officials, had always shown themselves good, if candid, friends of the Company. He also welcomed the Mayor and the Mayoress of Poplar, remarking in passing that it was a curious feature of the works that they should be situated in the Borough of Poplar, which was an area supplied with gas by another Company, the Commercial Gas Company, several of whose officials he was pleased to see that day.

The Reconstructed Works.

"The Bow Common Works," continued Sir David, "cover an area of 9½ acres. Before this reconstruction there were two retort houses with inclined retorts, which gave an annual output of 465 million c.ft. of gas, the coal for which was brought by rail, as at present, mainly from Yorkshire and the Midlands. As now reconstructed, the works comprise an installation of Woodall-Duckham continuous vertical retorts, from which a yield of 8,170,000 c.ft. of gas per day is obtainable. There are, in addition, two sets of carburetted water gas plant, each of a capacity of 1½ million c.ft. per day. The total output of the works in an average year should, therefore, be (say) 2600 million c.ft. —a considerable increase on the original output. All necessary ancillary plant is provided. A special feature of the reconstruction has been the introduction of up-to-date coal and coke handling plant, which the Lord Mayor has just put in motion.

"One of the features of this reconstruction has been the erection of handsome, artistic, and commodious offices, the designs of which are due to our architect, Mr. Walter Tapper, A.R.A., P.P.R.I.B.A., whom we are glad to see with us to-day. The Company's policy has been to introduce symmetry and artistic design into every department of its work; and we owe a debt of gratitude to Mr. Tapper for the part which he has played in assisting the Directors to maintain a high standard in buildings and fittings.

Interesting Statistics.

"Even as it is, these works, as reconstructed with this greatly increased output, can only produce 4½ p.ct. of the total gas made by the Company. The Company's mains would reach to the centre of the earth. The amount of gas sold through penny-in-the-slot meters can best be realized from the fact that, in a single hour in winter, over two tons of pennies are put into the coin boxes. The gas made by the Company in a single year would, I am informed by a classical friend, be sufficient to have maintained a hundred gas fires burning continuously since the days of Julius Cæsar. These figures give some indication of the scale on which the Company works; but one of the most important aspects from the national point of view is the direct bearing of the Company's activities on public health. The doubling of the gas appliances in use has been accompanied by a similar reduction in the soot falling in London, and a corresponding increase in the value of the sunshine. Gas has been, and always will be, by far the most important factor in making for clearer skies. Smoke means not only millions of pounds of damage to buildings, property, and clothing, but also hospitals and sanatoria to remedy diseases which might have been, in part at least, prevented.

The Lord Mayor chatting to some of the Workmen.

Co-Partnership.

"I think, my Lord Mayor, that from your own wide commercial experience, you will understand that the successful working of a Company like this, so much in touch with the public, is a heavy responsibility. The Directors have always felt that some system is needed which links in close touch the management, the employee, and the consumer; and we believe that in our co-partnership system, founded in 1909, we have almost found the ideal. We serve 1¼ million

consumers and employ 19,000 men and women, of whom nearly 16,000 are co-partners, holding fully £800,000 of the Company's stock. [Applause.]

"We have a great Sports Association open to all employees and their wives and families, and two large Sports Grounds to serve the Eastern and Western areas of the Company; but all this would not be enough if the Company were content *stare super antiquas vias*. We believe in progress in all directions, and, not least, in the progress which comes from the linking of scientific research with practical work. Our staff of Research Chemists is a large and growing one, and, since we have provided them with modern and up-to-date laboratories on a large scale at Fulham, the results have more than fulfilled our highest anticipations."

At this stage Sir David presented the Lord Mayor and the Lady Mayoress with shagreen caskets as mementoes of the occasion.

The LORD MAYOR thanked the Governor and his colleagues for the beautiful gift. It was, he said, the first time he had had the experience of inspecting a gas-works and of seeing gas produced under modern conditions; and he could assure them that the experience had been most interesting.

"I realize," said Sir William Waterlow, "the close connection which has always existed between these works and the City of London; and I am glad to think that the connection between the City and the Gas Light and Coke Company is closer and more intimate than ever it has been before.

"I was particularly struck by the reference which you made to the increasing purity and cleanliness of the atmosphere of our great City, which, I agree, is largely due to the growing consumption of gas for heating and industrial purposes. The smoke problem in London has existed for some 800 years, and I recall that John Evelyn, the diarist, in the days of King Charles II., referring to London's smoke, speaks of 'that Hellish and dismal cloud of sea-coal which is not only perpetually imminent over her head . . . but so universally mixed with the otherwise wholesome and excellent air, that her inhabitants breathe nothing but an impure and thick mist accompanied with a fuliginous and filthy vapour, which render them obnoxious to a thousand inconveniences, corrupting the Lungs, and disordering the entire habits of the Bodies; so that Catharrs, Phthisicks, coughs, and consumptions rage more in this City than in the whole Earth besides.'

"I know that the use of gas in the printing trades is increasing by leaps and bounds; and, indeed, I have been credibly informed that in the City of London alone the total amount of gas used by printers, &c., in the year 1928 was 292,717,400 c.ft., and in the year 1929, 297,614,200 c.ft., which is equivalent to (say) a month's output from these works, or to the annual consumption of a town of 50,000 inhabitants, such as Colchester.

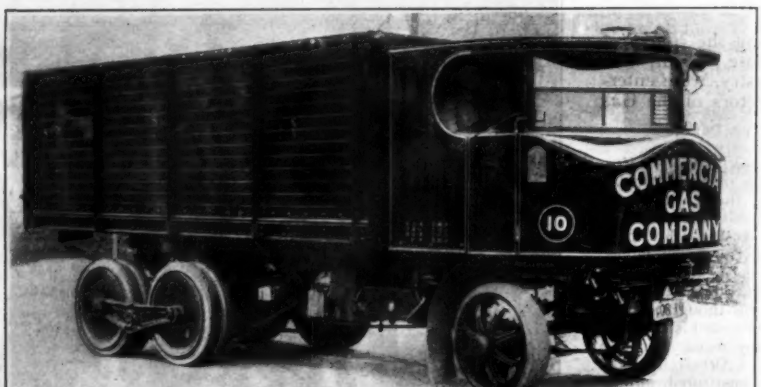
"The close relationship of the City of London and the Gas Light and Coke Company," continued the Lord Mayor, "is maintained in many ways. Several of the most important of our City streets and buildings—not forgetting bridges—are lit by the Company's gas, and if my friends on the London County Council will allow me, I may remind them that the City, jointly with them, is responsible for testing the purity, &c., of the Company's gas and the accuracy of its meters. It should, I think, be a considerable satisfaction to the Company's consumers to realize to what strict tests their gas is subjected and how satisfactorily those tests are met which have been imposed upon the Company by the wisdom of Parliament.

"I should like to pay a tribute to the courtesy and efficiency of the Company's employees of all grades, and I am sure that not a little of the Company's success is due to its system of co-partnership. I believe that the introduction and working out of this system in the Gas Light and Coke Company has been largely due to your personal efforts and the consistent way in which you have advocated the principles of co-partnership. ["Hear, hear."] I am glad to see here to-day so many representative co-partners and their wives and also the representatives of the works committees throughout the Company.

"I was particularly interested to learn of the generous provision made by the Company for healthy recreation for all its employees and their wives and children."

In conclusion, he would say what a great pleasure it had been to the Lady Mayoress to come there that day and to see something of the many processes required in manufacturing and purifying the gas before it was supplied to the home. She and he alike had been much interested to hear of the successful endeavours which the Directors were making to bring artistic design into close connection with gas stoves and fittings. He wished long continued prosperity to the great Company of which Sir David Milne-Watson was Governor.

Large Capacity Coke-Fired Lorry



A coke-fired "Sentinel" D.G.6, recently delivered to the Commercial Gas Company. This wagon—a repeat order—has a specially large capacity, and a tipping body for the transport of small coal.

Opposition to Erection of Holder at Tunbridge Wells.

Objections by owners of residential property in the district to the erection of an additional gasholder by the Tunbridge Wells Gas Company, on land adjoining their works, having a frontage on Sandhurst Road, were heard by an official arbitrator at the Town Hall, Tunbridge Wells, on June 25.

The Company applied for the modification of certain restrictions imposed by covenants contained in an appointment dated March 24, 1866, which prevented the setting-up on the site of any buildings, works, or erections. The grounds of the application were that, by reason of changes in the character of the neighbourhood, and by reason of the fact that the Tunbridge Wells Gas Company have, and for many years had, three gasholders on the land immediately adjoining the west boundary, and that the greater part of Liptraps Estate (of which the property formed a part) still remained, and appeared likely to remain, undeveloped and unbuilt upon, the restrictions ought to be deemed obsolete, and that the continued existence thereof impeded a reasonable user of the land for public purposes without securing practical benefits to other persons. On the other hand, the owners of the property in the neighbourhood contended that the erection of a gasholder 30 ft. higher than the others would be detrimental, causing depreciation to the value of their property.

After a lengthy hearing the Arbitrator (Mr. HUGH C. WEBSTER) closed the inquiry. Mr. D. L. V. HANSON (Messrs. Stone, Simpson, & Hanson) appeared for the applicants, while the objectors were represented by Messrs. E. G. BRETHERTON, E. B. SOADY, & C. BERRY.

Outlining the case for the Gas Company, Mr. HANSON declared that they had carried on their undertaking in their present works since 1879. Throughout those years their work had been steadily increasing. The annual output of gas now was seven times greater than in 1879. The storage capacity, however, was only some three-and-a-half times greater. He understood gas companies liked to have 24 hours of storage, while they were now reduced to only twelve to fourteen hours, which was quite inadequate. The new holder was urgently required to meet Tunbridge Wells' demands. They had had no increase in storage since 1910. Since then the annual output had gone up by 74 p.ct., while the maximum daily output had gone up 83 p.ct. The question of site had been considered, and the only available site was on the land subject to the application. The Board of Trade had authorized the land's use for gas manufacture apparatus, and the Tunbridge Wells Corporation had undertaken to schedule it for industrial purposes under their town planning scheme. The Company held some other land adjoining, but it was impracticable to build there, as a main sewer ran through the land. The Board of Trade's Order had been advertised in the usual way, and notices served on owners of houses within a radius of 300 yards, and no objections had been received.

Mr. *Leonard James Langford*, Engineer for thirteen years to the Gas Company, declared that the holder had now become absolutely necessary to meet the requirements of the public. They had considered all possible sites, and this was the only available one.

Mr. *Lionel Eric Ward*, acting as Surveyor for Mr. Errington-Wales, Sherwood Park, was called by Mr. Soady. The granting of the application, he affirmed, would, in his opinion, adversely affect the value of the whole estate extending over 46 acres. If that restriction was lifted, the lifting of other restrictions would follow.

THE "JOURNAL" TECHNICAL RECORD

Which also contains Full Reports of Meetings of Gas and Allied Associations ——

Wales Juniors in London

THE WALES AND MONMOUTHSHIRE JUNIORS AT EAST GREENWICH.

The tendency for Gas Associations to travel further and further afield on their visits seems generally to be spreading, and another example was to be found last week in the Wales and Monmouthshire Junior Gas Association, who on July 3 arrived in London to pay a visit to the South Metropolitan Gas Company's works at East Greenwich.

The visitors were met on their arrival at Paddington and conveyed by 'bus to East Greenwich where they viewed the Sports Ground before being entertained at lunch. The Association were under the Presidency of Mr. W. E. Crowley (Newport), supported by Mr. H. S. Bartlett (Cardiff, Hon. Secretary), Mr. C. B. Felton (Newport, Immediate Past-President), and some thirty members. The South Metropolitan Company were represented by Mr. Andrews, the East Greenwich Works Engineer and Manager, who, after the Loyal Toast had been honoured, addressed a few words of welcome to the visitors and told them something of what they would see in the course of their inspection of the works.

He wished to convey to them the good wishes for an enjoyable day from Dr. Charles Carpenter, the President of the Company, who very much regretted not being able to be present to welcome them personally. At the East Greenwich works, continued Mr. Andrews, they were making 14 million c.ft. of gas per day, and they extended over an area of approximately 150 acres. They claimed that their apparatus was as efficient as possible, and they obtained a gas yield of 78 therms per ton. They would view the works in their general and everyday aspect, and nothing had been specially prepared for them. He referred to the new purification plant which was in course of construction, stating that this would have a capacity of 6 million c.ft. per day when completed about next November.

After lunch the party was augmented by a number of members of the Southend Gas Company who were taking advantage of this opportunity to view the works.

A Unique Purification System.

Of particular interest at these works is the purification system, which is probably unique in gas-works practice. After leaving the condensers the gas is passed through a series of Livesey washers, of which there are three to each stream. In these are removed the last traces of tar and a certain proportion of ammonia. The washers in each set are placed at different levels in order that the liquor coming from the scrubbers may flow through by gravity, thus saving power for pumping. The gas is then passed through the scrubbers, which are about 60 ft. high, for the final elimination of ammonia before it enters the purifiers. The scrubbers are arranged in sets of two or three, in the last of which clean water is used.

There are five sets of purifiers, one set for each gas stream, and each set consists of four primary and two secondary boxes. The purifiers are 70 ft. long, 30 ft. wide by 5 ft. deep, and each is charged with about 150 tons of purifying material. They are all of the wet lute type. The sulphuretted hydrogen content of the gas is removed in the primary boxes, which are operated on the backward rotation system. In the secondary is removed the sulphuretted hydrogen formed by the decomposition of carbon bisulphide in the catalytic sulphur extraction plant. The decomposition of the carbon bisulphide is effected by passing the gas at a temperature of 400° C. over metallic nickel heated to a temperature of 450° C., and the reaction is carried out in a series of iron pipes containing the catalyst, the pipes being enclosed in a firebrick chamber heated by producer gas. The carbon bisulphide is decomposed into sulphuretted hydrogen, which is extracted in the secondary purifiers, and carbon, which is deposited on the nickel catalyst. The sulphur extraction plant comprises ten units, each capable of dealing with 8400 therms per day.

After the inspection of the works the visitors were entertained at tea, when Mr. Andrews took the opportunity of welcoming Mr. Canning and his party from Southend. The day's proceedings, he said, of the combined company had afforded very great pleasure to himself and his staff.

Mr. W. E. Crowley, in proposing a vote of thanks to the South Metropolitan Gas Company, asked Mr. Andrews to convey to Dr. Carpenter and the Directors of the Company the Association's high appreciation of the invitation which had been extended to the Association. It was an invitation which had been looked forward to with very keen interest, and it had far exceeded any pleasurable anticipation they had had. The works, he said, had methods which were peculiarly their own, and they felt honoured at the opportunity of seeing them.

Mr. T. F. Canning (Engineer to the Southend Gas Company) said it gave him very great pleasure to propose on behalf of the party from Southend a hearty vote of thanks to Mr. Andrews and his staff for the trouble taken in showing them round these very fine works. It was a number of years since he had the pleasure of visiting these works, and he had to confess that when he saw them that day he could hardly recognize them. He would like to congratulate Mr. Andrews on the improvements effected. There was something in the atmosphere of these works, he said, which spoke of efficiency and interest. They were particularly impressed by the efficiency in the retort house, where they saw results as good as those obtained in a

large number of vertical systems. There was only one explanation of these results, and that must be the question of efficiency—in other words, management. They came to these great works and saw one of the oldest systems of carbonization in operation, and yet they saw results which were exceptionally good. Mr. Canning said that he would also like to thank Mr. Andrews for inviting the party from Southend at the time when the Wales Association were there. It had given him much pleasure to meet some of his old colleagues from Newport; and he was greatly impressed by their keenness in coming such a long distance. He was formerly a member of the London and Southern District Junior Gas Association, and they had travelled considerable distances, but not so far as this.

Mr. ANDREWS said that he himself and his staff needed no thanks for the time or trouble they had expended that day. It would be his duty and pleasure to convey their very kind remarks to the President and Directors of the Company. They at the works had been fully repaid by the interest and enthusiasm with which they had reviewed the operations they had seen that day. To them, the works assumed a very common and unimportant place in their lives, and they were often unable to appreciate the results of their efforts until they had a visit such as this from brother engineers, and by whose remarks they were able to judge whether they were on the right path. The remarks expressed that day seem to indicate that they were on the right track. They liked genuine criticism, but not flattery.

Western Junior Gas Association

WESTERN JUNIORS AT PLYMOUTH.

The Summer Meeting of the Western Junior Gas Association was held at Plymouth on Saturday, June 21. The members assembled at the Royal Hotel at 12.45 p.m., where they were entertained at luncheon by the Chairman and Directors of the Plymouth and Stonehouse Gas Company—Mr. R. J. H. CLARK, the Chief Engineer of the Company, being in the chair.

At the conclusion of the luncheon, after the Loyal Toast had been honoured, Mr. CLARK welcomed the visitors. He first read a telegram received from Mr. J. H. Ellis, their Managing Director, in which he apologized for being unable to be present, and wished them a successful meeting. It gave him real pleasure, Mr. Clark continued, on behalf of the Directors of the Plymouth and Stonehouse Gas Company, to extend to them a hearty welcome to Plymouth. It was a double pleasure to him as a former member of the Association to have the opportunity of inviting them to visit the works with which he had been associated for the past 27 years. He would like to take the opportunity of congratulating the officers and members of the Association upon the high standard of work they were doing, and on the many excellent contributions made from time to time to the ever-growing mass of technical knowledge. This was illustrated in a very gratifying manner—for instance, when their President's Address was quoted in one of the papers given at the Institution Meeting in Leeds this year. Mr. Shapley, in his Presidential Address at that conference, referred to the growing demand for trained engineers. It was, of course, impossible for all the young men entering the profession to go through a university; but the Institution's Education Scheme, and the help and encouragement given by Junior Associations, such as theirs, would materially help in supplying the well-trained men their industry was demanding.

The PRESIDENT (Mr. J. T. Spencer), in reply, said that they were pleased to acknowledge the good wishes of Mr. J. H. Ellis, the Managing Director of the Company; and he thanked Mr. Clark for his words of welcome. The President proposed a hearty vote of thanks to the Chairman and Directors of the Plymouth and Stonehouse Gas Company for their generous hospitality, and to Mr. Clark for the excellent arrangements which had been made to make the day a memorable one.

This was seconded by Mr. A. BARRETT (Senior Vice-President) and carried with acclamation.

The members were then conveyed to the works, where a tour of inspection was made, under the guidance of Mr. Clark and members of his staff—Messrs. A. E. Bullen, H. C. Widlake, J. W. Pye, and W. R. Quiller.

Particular interest was taken in the electrical power plant and in the booster house, where distant pressure indicators, holder stock indicators, and a distant governor pressure control are situated.

The inspection completed, a launch was in readiness, and the members were taken for a run up the harbour, where a good view was obtained of the dockyards, warships, and Royal Albert Bridge at Saltash. Tea was provided on board amid most pleasant surroundings, and the return was made to the Promenade Pier at 6 p.m.

Oxy-Acetylene Welding and Metal Cutting Within the British Empire

In connection with the International Congress to be held at Zurich from July 9 to 12, the Permanent International Committee of Acetylene, Autogenous Welding, and Allied Industries issued a request to each country which is a member of that Committee for information concerning the development of the oxy-acetylene industry within its territory, during the past ten years, for the purpose of placing such reports before the Congress.

The Council of the British Acetylene Association decided to make use of this opportunity by preparing a full and comprehensive report upon technical training, applications in industry, and the general progress of the oxy-acetylene welding and metal-cutting processes in this country and in other parts of the British Empire; and the full Report has now been published, together with the actual synopsis which is to be presented at the Congress.

The Report is divided into three main sections, the first of which deals with the training of welders and the work carried on at various training schools. The work is conducted on the one hand by public technical schools and colleges and on the other hand by manufacturers themselves, who in many cases provide training facilities in their own works. The two main methods of instruction in operation are explained—in the one case where welding is treated as a separate subject, in that

the student learns oxy-acetylene welding and cutting as such, and not in connection with any particular trade; in others, welding is subsidiary to and forms part of a course of training in some other subject, such as, for instance, sheet metal working.

On the Gas-Works.

Section II. deals with applications of the oxy-acetylene process in industry—the procedure adopted being the separate consideration of some forty of the major industries with a view to determining the manner and extent to which they employ it. Among these is a section on its uses on gas-works, where, it is stated, the uses to which the oxy-acetylene blowpipe is put may be divided into two distinct sections—welding and cutting "in the field," and welding and cutting for plant maintenance and repair at the gas-works itself. The chief work done in the field is the welding of pipelines. Probably the first welded high-pressure gas main to be put down in this country was that constructed by a South-Eastern local gas undertaking between October, 1913, and May, 1914. The length was 45 miles, and included emergency valves every 1000 yards and welded-in branches for picking up side-roads. In a test over this pipeline of 24 hours' duration, and over a total length of 20 miles, the line was found "bottle tight" at 100 lbs. pressure per sq. in.

Other processes to which oxy-acetylene welding is put are dealt with, including tool making and repairing, the building of tubular stands for gas water heaters, welding of steam mains, structural work repairs to coke-screening plant, conveyor chains and buckets, repairs to engine parts, purifier box covers, small castings, iron work on gas retorts, and for many other purposes.

In a similar way the welding process as applied to some fifty industries in this country and the Empire is described in an interesting and comprehensive manner.

In the third and final section of the Report the structure and operations of the oxy-acetylene trade itself are reviewed, and the section deals in turn with the activities of manufacturers and suppliers of plant, equipment, and material.

Manchester Juniors Visit Wallasey.

On June 28 the Manchester and District Junior Gas Association visited Wallasey. The Gas Engineer, Mr. H. B. Holliday, Alderman Gordon, and Councillor Hall, together with their ladies, received the party at Seacombe Ferry.

After visiting the gas-works and the water-works at New Brighton and Wallasey, the full party met at the Town Hall, Wallasey, for high tea, at which the Mayor, Alderman J. G. Storey, J.P., presided. Mr. H. C. Applebee, the President, introduced the Mayor, who gave the visitors a hearty welcome. The President proposed a vote of thanks to the Mayor, Members of the Gas and Water Committee, and the Gas Engineer for their kindness and hospitality; and Councillor A. F. Pullen (Chairman) and Councillor H. Johnson (Vice-Chairman) replied.

Mrs. Applebee, wife of the President, and Mrs. Hailstone, widow of the Association's late President, thanked the ladies of the Committee for their welcome and attendance that day. Mrs. Councillor H. Siddall replied, and was supported by Alderman Gordon.

Installation of President.

The Hon. Secretary (Mr. J. Alsop) asked the President, on behalf of the Council and Members of the Association, to instal in office his successor, Mr. C. H. Bamber, B.Sc., who would take office in October.

This Obsolete and Inefficient Equipment*

By H. P. Morehouse, Industrial Fuel Representative, Public Service Electric and Gas Company, Newark, N.J.

The gas industry does not seem to be blessed with the glamour created by spectacular new methods of utilization. This, in some industries, continually furnishes new things to talk about. However, we most certainly are cursed with plenty of *old relics* of bygone days that are still in operation in many of our customers' plants, which it will do us a lot of good to talk about. While the subject of this paper is an old one, I do not believe any very concerted effort has been made in the past to rid our lines of old broken down machinery in the guise of gas equipment which is daily giving our industry a black eye.

What Is Obsolete and Inefficient?

What do we mean by "Obsolete and Inefficient Equipment?" In the first place, I would like to bring out the point that the two terms are not necessarily synonymous, although they are very often characteristic of the same job. In other words, equipment may look obsolete, and even be obsolete, yet may be as efficient as any appliance you could offer. On the other hand, equipment may appear modern in every respect, and even be new, but may be very inefficient. Only a trained industrial engineer who understands the mechanics of the operation, considered from the over-all production angle—raw material to finished product—can decide this question.

A case in point would be a furnace that is perhaps used for a few hours a day, but only once or twice a month. An inspection of this furnace shows that, while it turns out a good finished product, it is poorly insulated. We might jump at conclusions on this equipment and say at once the man needs a new furnace. If we look into the economics of the installation, we might find that, while we can guarantee a 15 p.ct. fuel saving in a new furnace, the furnace is used so intermittently it might take years for the customer to get back his investment. Here is a case where the equipment is admittedly both obsolete and inefficient, yet how can we go to the customer and conscientiously recommend a new furnace? I do not bring up this point in defence of any failure to induce customers to instal new equipment, but I do want to establish the point that sometimes things are not as bad as they look.

I believe there are five main factors which might render an installation obsolete or inefficient.

First, is the type of furnace the correct one for the job? Have we a continuous type furnace installed where an in-and-out type would be more advantageous, because of the lack of sufficient production? Or more probably, have we a batch-type furnace installed where a continuous furnace would cut costs and improve quality by increasing uniformity of results? Too many of us put the cart before the horse, and are prone to look at a gas installation and immediately try to judge it, when, as a matter of fact, the furnace or oven installation should be the last point to be considered. We should first consider the product and the most economical process and try to make a furnace to fit the process, not the process fit the furnace. I believe it is every industrial engineer's duty, where permitted, to study the complete process and be able to make suggestions and recommendations that reach far beyond the gas equipment itself. These recommendations not only help to tie in the proper gas equipment, but greatly increase the prestige of the industrial representative in that plant.

The second factor which might render an installation obsolete and inefficient is a poor combustion system. As far as this point goes, on blast equipment, practically all appliance manufacturers are at the present time equipping their furnaces with some type of automatic proportioning device, some more elaborate than others, but nevertheless doing the job within the range of what we would term "efficient." On old appliances, however, there are still in use many of the two-valve type mixing systems which may or may not be efficient, depending on the operator. As for atmospheric equipment, there is probably more of this on our lines that is burning unsatisfactorily than there is of the blast equipment. Most such installations are greatly over-ventilated or greatly under-ventilated, with very few burning at the most efficient point. Here again we must be a little cautious in condemning. An Orsat apparatus is much better than the eye definitely to establish this point.

How One Load Was Saved.

I would like to cite an experience along this line that impressed this point upon me. We were in danger of losing a baking load of about 1 million c.ft. of gas per month because of high operating costs on rotary cake ovens. We were firing these converted ovens with multitube pipe burners. After several years' use these burners had become overheated, twisted, and ports clogged to the point that they burned with a long yellow flame. Frankly, I was ashamed to have any gas man see the job. It looked terrible. I prevailed upon the customer to instal a set of cast-iron drilled pipe burners—a new style that had just been developed for converting ovens. First, we ran the oven for a week with the old burners, taking very careful data on gas consumption, poundage, temperature, and operating cycle. Then we installed the new burners. They burned with a beautiful blue flame, and I was sure I could show a 15-20 p.ct. saving. We ran a test for another week, taking very careful data again, duplicating closely the operation of the previous week. Result—the old burners used from 5 to 10 p.ct. less gas than the new ones. Here again the installed equipment was obsolete and was apparently inefficient, yet, in the final analysis, the burners were not inefficient—a few Orsat readings gave us the real answer.

Importance of Insulation.

The third point of importance I put down as "lack of proper insulation." Too many customers think that a refractory

* Presented before the annual meeting of the Metropolitan Industrial Gas Sales Council, New York, April 23.

brick is the same thing as an insulating brick. If they have worked with oil they are almost sure to think this. Here again, thanks to the electrical industry, the present-day gas equipment is usually insulated to the point of the economics involved, but there are many manufactured appliances and home-made appliances on our lines where insulation has not received the proper attention. Two examples of this are found in the newspaper business on stereotype pots, the cake business, on cake ovens, particularly of the converted type. While on the subject of conversions, I would say that 75 p.ct. of conversion jobs lack proper insulation. The customer that insists on a conversion, rather than instal a modern furnace, is usually the same man who insists that refractory bricks and insulating bricks are made from the same clay. It is no easy job to get proper insulation, but it is our duty to push it to the limit.

The fourth point is lack of proper temperature control. I believe the field for automatic temperature control is enormous. Not 10 p.ct. of the gas jobs are thus equipped when probably at least 50 to 75 p.ct. of them should have automatic temperature control. Gas is an expensive fuel—it subjects itself easily to automatic control, and we should make the most of it. The saving made by such automatic control is often the margin by which we can get or hold a gas load.

The fifth and last point in declaring equipment obsolete and inefficient is one on which some of you may take issue with me. It has been heard of occasionally in the past, and I believe will be heard of much more in the future. That is the matter of "recuperation." I do not see that we can class equipment as obsolete and inefficient at this date because it lacks recuperation. But it is something for all of us to think about, and I believe something for the Research Committee of the American Gas Association to work on. Already one of the best known manufacturers of heating and ventilating appliances has engineers busy surveying the field to find the potentialities of a low-temperature recuperator unit (say) up to 1500° Fahr., which can readily be applied to standard equipment. When that unit is marketed we will have to form a new concept of obsolete and inefficient equipment.

I have outlined above the five points on which we can judge as to whether or not equipment comes under the title of this paper. Now, why is such equipment a menace?

In the first place it brings about a dissatisfied customer, which not only puts our load in a hazardous position, but also curtails our efforts to obtain further load in this plant. In the second place, dissatisfaction is a prolific breeder and very often spreads to the key men in other plants where we hope to obtain a similar load on gas. The third menace—it furnishes an entering wedge for other fuels or forms of energy and offers a good competitive salesman an excellent opportunity to do his stuff. Many times the electric salesman, or even the oil salesman, steps in here and gets the load, while we gas men sit back in our alibi armchairs and talk about the "romance of electricity" being a hoodoo over which we cannot rule. For years we have been working with obsolete and inefficient equipment. We purchased it as such from appliance manufacturers, and we didn't know the difference until the electric industry came along and showed us how. I refer to the bread baking industry, the brass melting industry, and to stereotype melting. There are many other examples, but the point is, as an industry we do not seem to take the initiative in developing the most efficient equipment. What advancements we make are often forced upon us.

This is not said in criticism; there are some very good reasons why this is so, but we must nevertheless face the facts. It is a menace to have bad equipment on our lines without even letting the customer know that a more economical gas set-up is to be had. The crime is not in having the equipment on our lines, but in not making a vigorous effort to dispense with it.

We all know that the situation exists, but how are we going to locate this equipment in order to effect its retirement? It must be agreed that this work should be carried on according to some plan or system. To accomplish this it seems most logical to have a card file of all customers—these cards to contain such information as name, address, person to see, business, appliances in use, including those on gas or any other fuels. Customers should be educated to allow the industrial representative through the plant at least once a year to check up the equipment. This would be similar to a load check made by power companies and a routine with which the customer is already familiar. Most of us are apt to assume that we have a good line on all equipment in the plants we cover, but I rather believe that the man who knows of all the obsolete equipment in his area, and is making a systematic drive to rid his territory of such, is indeed a rare exception. This equipment check furnishes just the opportunity to get in and see what equipment needs replacing, repairing, or revamping. Notes should be taken on all of this and a record kept at the office.

How to Eliminate Inadequate Equipment.

Now we have defined obsolete and inefficient equipment. We have shown why it is a menace, and we have established a means through which to locate such equipment on the lines. Naturally, the big question is: What can we do to eliminate it? This problem immediately divides itself into three sections:

(*a*) Work in the plant.
(*b*) Work outside of the plant.
(*c*) Co-operation with equipment manufacturers.

Under work in the plant, I do not believe that we take advantage of Orsat apparatus anywhere near enough. We assume that as long as the burner has a blue flame combustion is satisfactory. I believe a majority of even the new jobs that go on the lines should be checked for flue gas analysis. Then every industrial department should be furnished with such equipment.

It is often practical to set a test meter on appliances where poor conversion applications can be replaced by standard equipment. If we find equipment that needs insulation, we should have a tie-in with some insulation specialists who can apply insulation satisfactorily. There are a number of such concerns in the metropolitan area. It is not enough to talk to the customer in generalities about insulation. We should submit a report that brings our recommendation down to the point of dollars and cents savings for a definite investment.

Often it is necessary and advisable to run a detail survey on an installation which is already on gas. We do this to get data needed in making recommendations that will hold the load on gas. Industrial departments should be equipped with such instruments as automatic temperature recording devices and Orsat apparatus for running tests on such suspicious equipment.

The second step is classed as "work outside the plant." Isn't it true that we very often see poor equipment and applications in a plant, and we are content to call our prospect's attention to the condition and then feel that our duty is done? If we meet with some resistance, as we usually do, don't we very often let the proposition rest until we get around again, perhaps a month or more later? In the meantime the effect of our first "jab" has become cold and some of its effectiveness has been lost. Would it not be better to come back to the office and make up a proposal, either in the form of a letter or a report? The report should be a résumé of such deficiencies as we find in the present equipment, the advantage and saving in the proposed equipment, supplemented with sketches or drawings where necessary. The report should include such information as insulation costs, temperature control costs, and complete information on any other accessories needed. This is a business-like way to go after the job. It puts a permanent record in the hands of the customer and acts as your benefactor when the competitor comes along and starts working on the job. The customer has the gas company's side of the story. He can give the two propositions a fair comparison and will not decide on a fuel based on the competitor's arguments alone.

Another important step for the industrial salesman in connection with "work outside of the plant" is to post himself on how the other fellow is doing a similar job. I mean this in the broad sense of inter-company exchange of ideas. This Metropolitan Industrial Gas Sales Council, which meets monthly, has for its purpose the discussion and interchange of ideas, methods, and problems, of the management of industrial sales and service activities. This benefit can easily be extended further by the proper co-operation of the industrial men out on the firing line. The annual meeting affords us the opportunity to get acquainted with our neighbours and become on such friendly terms that we will not hesitate to call on each other for an interchange of ideas on problems which are new to us. I know that several men will bear me out in the statement that such co-operation in the past has often been of great value—but let's have more of it.

The third step in the elimination of obsolete and inefficient equipment is to have the proper co-operation with equipment manufacturers. There are three ways in which equipment manufacturers can be utilized to very good advantage.

(1) *Utilizing Their Engineering Ability.*—The equipment manufacturer's representatives usually have a wide experience in the particular line which they handle and can make recommendations based on what they have seen done in other plants.
(2) *Utilizing Their Sales Ability to Help to Close Sales.*
(3) *Capitalizing on Their Generosity in Loaning Equipment for Trial Installations.*—In this connection the small appliance manufacturer should not be overlooked. He is, in some cases, more anxious to co-operate in this way than the better-established firms who argue that their equipment has been proved, and a trial installation is not necessary. Concerning the value of trial installations, I differ with some authorities who maintain this method shows poor sales tactics. In the Company which I represent we have obtained a great many jobs on the strength of a trial. The argument that it increases calls necessary to sell the entire job has not been true in my experience, because, once you get a gas job in, it starts to sell itself to the men who have to work with it as well as the man who has to pay for it. It is of great value to have the man who is to use the appliance sold on it. In the past five years we have obtained several large gas

loads based on the trial installation idea without the aid of which we would probably still be trying to sell the job. There is one important point to bear in mind with such installations. The job is not sold simply with the installation of the equipment. We have found it advisable to follow up the trials in each case by going in and getting data and submitting the data in a sales report form, with recommendations for putting the complete job on gas. The keynote to the success of trial installations is then—a close follow-up. We have found several manufacturers of combustion systems, temperature controls, ovens, and furnaces willing to co-operate with such trials based on the understanding that they will take back the equipment should the trial fail to convince the prospect.

In closing may I summarize this paper by saying that our lines are unquestionably loaded with obsolete and inefficient equipment? To get rid of it we must get in and locate it by some sort of systematic procedure. When we find it we must do one of two things—improve upon it, or replace it, because obsolete and inefficient equipment is the hot-bed that promotes competition.

Coke Marketing Problems*

By A. FISCHER, Semet Solvay Engineering Corporation, New York, and R. P. TIBOLT, New England Coal and Coke Company, Boston.

Every producer of coke must insure the growing popularity of this fuel by protecting quality and by intelligent marketing methods.

In bringing the merits of coke to the consumer, comparative claims as against other fuels may be avoided. It has been found best to confine selling claims to the case on behalf of coke, its economy, high percentage of pure heating substance, lightness in handling, cleanliness in the basement, heating plant and home, relatively low ash content, dependability of supply, adaptability to all types of heaters, desirability of summer heating, and the standing of the producer. It has been demonstrated many times that such a story, convincingly and ceaselessly told, will accomplish the desired object.

ELEMENTS OF COMPETITION.

Local competition varies widely. In some sections of the country anthracite is the sole factor. In others, where local soft coals are available, coke marketing changes its character materially. There are other localities where small or obsolete heating units are so inadequate for the load demanded with any fuel that the introduction of coke must sometimes be accompanied by effort to replace installed stoves with something more suitable. These are local conditions which each producer must learn and overcome individually.

The expansion of natural gas offers another type of competition in which cost of equipment and character of the heating load are vital factors. One other factor of competition deserves mention, and that is between coke produced by different processes or surplus production of industrial plants. In the interest of all who serve the fuel market, quality of all coke should be kept high, and sales methods should preserve stability.

CO-OPERATION WITH FURNACE MANUFACTURERS.

The coke producer, large and small, can profitably co-operate with the furnace and boiler industry. Occasionally a furnace manufacturer is still discovered who is dubious about the ability of his units to perform satisfactorily with coke. In such cases efforts should be made to learn and clear up any doubt. Coke has received some very valuable publicity from furnace manufacturers whose models have performed with good results when supplied with the proper sizes of this fuel.

MARKETS.

Planning the work of market development calls for a thorough knowledge of local fuel conditions in existing and possible markets. The more that is known about a territory, the more thoroughly can sales plans be developed.

The home vicinity retail market is generally the most lucrative and is the natural outlet; therefore primary attention should be given to the population and possibilities in each locality.

The gas company which makes coal gas has two forms of heat for sale, gas and coke. Some companies feel that these may be regarded as competing fuels and that there may be, in pushing both of them, a hampering element to heating with gas. It is believed that the difference in cost of a season's heating with each of these respective fuels puts them into separate markets, although there is no doubt that cases of incidental overlapping may be found. However, coke is most commonly sold in competition with other solid fuels. The gas company can best regard itself as being in a position to supply heat, giving the householder his choice of the two best fuels obtainable—one solid, the other gaseous. Every locality offers opportunities for industrial and commercial sales. These should not be neglected in marketing programmes.

ADVERTISING.

Coke may be marketed direct by the producer, through retail fuel dealers, or with a combination of the two outlets. The prices to be charged for each grade or size, and the seasons at which prices change, are matters of local determination, depending upon conditions that vary from year to year.

Sincere and timely advertising is most vital in promoting sales. In planning an advertising programme, there are several angles to consider: Cost of manufacture, cost of marketing, proper trade marking, markets and classes of trade, appropriation needed for steady increase of sales, dealer co-operation and resistance, extent of competition, selection of advertising advice, style of advertising best for trade, selection of best mediums.

Some of the advertising mediums which may be used are: Newspapers, dealer advertising, direct-by-mail, trade publications, telephone directories, instruction circulars, radio, calendars, programmes, special trucks, sales letters, billboards, street cars, downtown office, novelties.

Advertising mediums of established merit are available to the coke merchandizer. However, only two or three of these are usually necessary to take care of any local situation.

Good results have been obtained by the use of newspaper display, outdoor advertising, direct mail, and exhibits at shows and local fairs. Radio has, more recently, been successfully used in many sections.

Producers in many lines have found it effective to shape advertising plans so that the distributor and retailer share the responsibility, interest, and cost of promotion. Where all are involved who share in the profit of a product or service there is the utmost concern over customer satisfaction, which results in healthy development. The variety of co-operative methods is infinite, and seems to be limited only to the resourcefulness of the individuals interested.

SELLING AND SERVICING.

Coke marketing is a three-sided problem. Good preparation and good advertising must be assisted by good customer contact. Combined with a proper demonstration, canvassing and telephone solicitation have been found to be effective in many localities. In canvassing it is well to provide salesmen with literature which explains the merits of coke and the proper manner of heating the home. The sales representative should be prepared to answer all ordinary questions about coke, recommend the proper size, and arrange terms and deliveries.

Giving service with coke has proved most effective in developing and holding business. Service consists of demonstrations of the correct way to run a heating plant with coke, suggestions for keeping the furnace in good condition, and selection of proper sizes to obtain the utmost satisfaction, efficiency, and economy. Such service also makes an effective advertising argument. It has been advantageously combined in various ways with solicitation.

SUMMER ACTIVITIES.

Almost every coke retailer has evolved methods of moving coke into customers' bins during the summer months. Certain companies arrange for the fall year to protect customers against price increases if they make commitments and have their bins filled in the summer. Others permit time extensions or deferred payments on summer fill-ups, but do not protect customers against price changes for refill deliveries. There are many variations to fit local buying habits and conditions.

Summer contracts with winter price protection assure a consumer's business for the ensuing season. Some unusual cases of business resourcefulness have been observed in connection with off-season selling.

The summer of 1930 is just ahead. Your committee suggests that the American Gas Association undertake to gather this year data for the information of the industry on the summer selling methods.

ACTIVITY AGAINST SMOKE.

There has been steadily increasing agitation against smoke

* A discussion on the marketing of coke, prepared for the Sub-Committee on Coke of the American Gas Association Carbonization Committee, and incorporated in the report on coke presented at the Joint Production and Chemical Conference, Cleveland, Ohio, May 21-23.

in practically every American city. The consensus of viewpoints at present resolves itself into two alternatives:

(1) Burning of smoky fuels in units of sufficient size and proper design to obtain complete combustion; or (2) the use of smokeless fuels in less efficient stoves, furnaces, and boilers.

It has been quite definitely established that a very substantial contribution to the smoke nuisance in cities is directly traceable to domestic heating. To remedy this condition, the use of coke fits the situation completely with any type of heating plant.

Dustless Treatment.

There has been developed a dustless treatment of coke and other solid fuels through the use of moisture absorbing chemicals, the most common of which is calcium chloride.

To date, approximately twelve producing plants and a number of retail dealers have been treating domestic coke in this manner on both carload and truck deliveries.

This discussion on coke marketing only aims to present a picture of methods and policies which have been found constructive and successful. It has purposely avoided detail and reports of individual experience.

"Thylox" Liquid Purification Plant at Racine.*

By Frank B. Colbert, Wisconsin Gas and Electric Co.

The new liquid purification plant of the Wisconsin Gas and Electric Company at Racine was designed to purify 10 million c.ft. of gas per day. Part of the equipment is capable of handling 15 million c.ft. of gas daily; and by installing certain additional units in the rest of the plant the gas purifying capacity can be increased to the higher 15 million c.ft. rate. The gas purified at the plant consists of coal gas to which some carburetted water gas is added for peak load. This purification plant was designed and constructed by the Western Gas Construction Company, a subsidiary of the Koppers Company, and the process in use is the "Thylox" liquid purification process developed by the Koppers Company.

Two principal operations are carried out in the "Thylox" liquid purification plant at Racine—absorption of the hydrogen sulphide and hydrocyanic acid from the gas by the "Thylox" solution, and regeneration of the solution by air, so that the solution can be used for absorption again. The same solution is re-circulated over and over again through the absorber and the regenerator or thionizer, this repeated use of the same body of solution resulting in an economical method of purification.

Advantages of Racine Installation.

The "Thylox" liquid purification plant at Racine represents a distinct advance over previous liquid plants of the sulphur recovery type, as it is the first large commercial plant in the United States in which the new type pressure thionizers are in operation. Previous thionizers required a relatively large amount of ground space and a much larger quantity of air to accomplish the same aeration results. The pressure thionizer excels in simplicity of construction, small ground space requirement, in a greatly reduced volume of air to regenerate the solution, and has the further advantage of requiring no building. The whole purification plant represents a most compact arrangement of apparatus.

The solution used in the "Thylox" process remains perfectly clear of all solids except sulphur throughout the cycle of purification of the gas and regeneration of the foul solution. On aeration in the thionizer, finely divided solid sulphur is liberated, which is derived from the hydrogen sulphide originally contained in the gas. This sulphur is filtered off from the "Thylox" solution and is a valuable bye-product from the process.

The absorption of hydrogen sulphide and hydrocyanic acid from the gas is carried out at Racine in a single scrubber in which the gas passes upward counter-current to the descending "Thylox" solution. About 97 p.ct. of the H_2S is removed in this absorber, the remaining traces of H_2S being removed from the gas in oxide boxes. Practically complete removal of hydrocyanic acid is obtained in the "Thylox" absorber.

The foul solution from the absorber runs into a re-circulating tank in which the temperature of the solution is raised to about 95° Fahr. From the re-circulating tank the foul solution passes to three aerators or thionizers, each 4 ft. in diameter. These thionizers are tall, narrow towers, into the bottom of which both the foul solution is pumped and compressed air is blown through air distributors. The air carries the sulphur particles in the form of a foam to the tops of the thionizers, which are enlarged to form a foam chamber or skimming tank. In this tank, the thick sulphur froth overflows at the top into the slurry tanks, while the clear "Thylox" solution runs out at a lower level and flows into the sprays at the top of the absorber, thus completing the cycle of solution flow. The two sulphur slurry tanks are located between the thionizers and the absorber; these tanks are about as tall as the absorber and slightly larger in diameter than the thionizers. The sulphur suspension is stored in these tanks, from which it passes to the large American continuous filter.

The sulphur produced on the continuous filter is a wet paste. The sulphur particles are extremely fine in size, which makes this form of sulphur highly valuable as a fungicide. The sulphur paste needs only to be washed with water to be ready for sale as an agricultural fungicide. This agricultural sulphur is sold as "Koppers Flotation Sulphur."

The sulphur produced in the liquid purification plant at Racine may either be sold in the wet form as described above or else melted down to commercial brimstone for use in sulphur burners at paper mills, sulphuric acid plants, &c. For this purpose, a large steam-jacketed autoclave is provided at the Racine plant, in which the sulphur filter cake is melted down under steam pressure. The molten sulphur is run into large, shallow pans in which the sulphur is readily broken into large pieces of brimstone.

The strength of the circulating solution is maintained by periodic additions of soda ash and of "Thylox" compound. These chemicals are both soluble in water, and the proper amount of solution is added from a dissolving tank as required.

Advantages of "Thylox" Process.

The "Thylox" process is the only sulphur recovery purification process in which the circulating liquid contains no suspended material in addition to sulphur. The use of a clear solution in this way results in a purer form of sulphur. The advantages of the high purity of "Thylox" sulphur are shown by the fact that "Thylox" sulphur is the only liquid purification sulphur which is being melted to brimstone on a commercial scale. Another advantage in the use of the "Thylox" process over previous sulphur recovery processes consists in the low requirement of soda ash, which amounts to less than half of that required in the other processes.

* Paper presented before the Wisconsin Utilities Association, Racine, Wis., April 24-25.

Parliamentary Intelligence.

[From Our Special Correspondents.]

House of Lords.

Private Bills.

The South Yorkshire and Derbyshire Gas Bill has been read a second time, and referred to a Committee.

The Brighton and Hove Gas Bill has been read a third time and passed with amendments, and returned to the Commons.

The Hartlepool Gas and Water Bill has been reported from the Committee with amendments.

Special Orders.

The following Gas Orders have been laid before the House and referred to the Special Orders Committee: Colchester Gas Company; Farnham Gas and Electricity Company; Tottenham and District Gas Company.

House of Commons.

Private Bills.

The Lords amendments to the Brighton and Hove Gas Bill have been considered and agreed to.

The Brixham Gas and Electricity Bill has been referred to the Unopposed Bills Committee.

Special Orders.

The following Special Orders have been presented and ordered to lie upon the table: Colchester; Farnham; Tottenham.

Municipal Compulsion to Use Electricity.

Col. Howard-Bury (C., Chelmsford), in the House of Commons on July 7, asked the Minister of Health whether he was aware that since his attention was called to the action of the Barnsley Town Council in threatening with eviction tenants of municipal houses who had gas installed in their homes, the Town Councils of Dover and Wrexham were showing a similar hostile attitude towards the installation of gas on new housing estates; and whether he would take steps to ensure that tenants had freedom of choice regarding public services for heating and lighting in their homes.

Miss Susan Lawrence (Parliamentary Secretary, Ministry of Health): No, sir. My right hon. friend has received no representations to the effect suggested. He will, however, be glad to consider any evidence which the hon. and gallant Member may have indicating that the Councils in question are making an unreasonable use of their discretion in this matter.

Col. Howard-Bury asked if Miss Lawrence was aware that in both cases the Gas Companies were privately owned, and that on one estate no less than 95 p.ct. of the tenants wished to have gas, but were prevented from having it because the electricity supply was municipally owned. Would she take steps to see that these tenants were given freedom of choice?

Miss Lawrence repeated that the Minister would be glad to consider any evidence which Col. Howard-Bury cared to submit on the point raised.

REGISTER OF PATENTS

Control of Water Gas Manufacture. No. 306,537.

THE WESTERN GAS CONSTRUCTION COMPANY, of Fort Wayne, Indiana (Assignees of BARR, W. A., of Fort Wayne).

No. 4441; Feb. 9, 1929. Convention date, Feb. 23, 1928.

The following are among the claims made for this invention:

1. Apparatus for co-ordinating the operation of a plurality of water gas manufacturing units; characterized by individual control mechanisms for effecting cyclic operation of each unit and a central controlling mechanism operated independently of the individual control mechanisms but so connected therewith as to inaugurate the cycles of the several units in predetermined uniform or other sequence.

2. Apparatus as claimed in claim 1; characterized in that the individual controlling mechanisms are ineffective of themselves to progress through certain positions in their cycles of operation unless such positions are reached concurrently with predetermined times for progression therethrough determined by the central controlling device, and for which said device is set.

3. Apparatus as claimed in claims 1 or 2; characterized in that the controlling mechanism is adapted to vary the length of cycle of the water gas units as desired.

4. Apparatus as claimed in claims 1—3; characterized in that each individual operating mechanism interrupts the progress of the cyclic operation of its respective unit at a predetermined point therein, the resumption of operation of each unit being effected by the controlling mechanism in uniform sequence at an interval variable as desired.

5. Apparatus as claimed in claims 1—4; characterized in that the individual operating mechanisms are ineffective of themselves to change the operation of a unit from a "blow" period to a "run" period, this being effected by the controlling mechanism in the cycle of operation of each unit in a sequence always uniform but which may be varied as to the actual period of time.

6. Apparatus as claimed in any of the preceding claims; characterized in that the controlling mechanism inaugurates the cycle or a succession of cycles of each unit in uniform sequence but in staggered relation to those of the other units.

Control of Horizontal Retorts.—No. 329,167.

GLOVER, W. T., of Oldham, and TOOGOOD, H. J., of Elland.

No. 15,306; May 16, 1929.

Fig. 1 is a sectional elevation illustrating an automatic control apparatus constructed in one convenient form in accordance with this invention; while fig. 2 is a sectional plan view on the line A B of fig. 1.

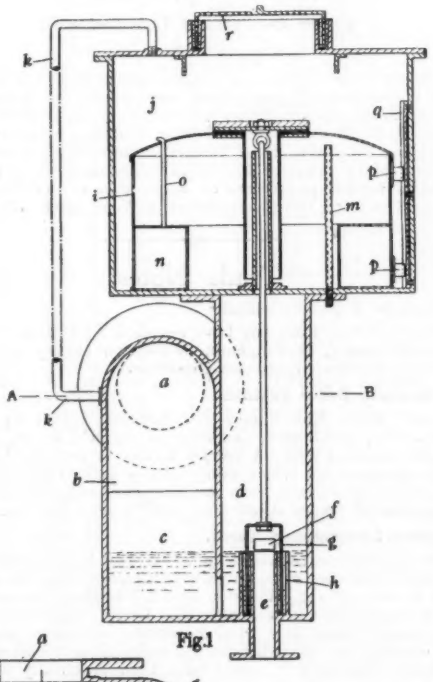


Fig.1

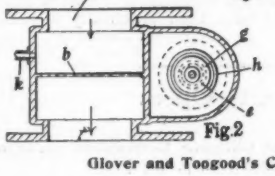


Fig.2

Glover and Toogood's Control System.

Gas in the main *a* is adapted to flow beneath the lower edge of a plate *b* (extending across the upper part of the main) which obstructs the direct gas flow; and a chamber *c* is provided for the accumulation in the main beneath the plate of the liquor which normally trickles therethrough and serves to wet the main, cool the gas, and prevent the formation of crystals of chloride of ammonia. The liquor well has communication with a vessel *d* which has an outlet branch *e* over the upper edge of which the liquor flows out of the vessel *d*. Access to the branch *e* from the vessel *d* is obtained through the hole *f* in a bell *g*, the lower end of which is sealed by a mercury or other seal *h*. The bell *g* is connected with a bell *i* in a vessel *j* which is in communication, by means of the pipe *k*, with the inlet gas side of the plate *b*. The inside of the bell *i* is placed under atmospheric pressure by the pipe *m*, but an annular belt *n* around the bell acts as a float to support the bell. It is vented by the pipe *o*. The bell *i* therefore rides upon the liquor in the vessel *j* and is prevented from turning by lugs *p* extending into a slot in a vertical guide *q*.

The cover *r* upon the vessel *j* is tar or liquid sealed, and can be removed if it is desired to gain access to the bell *i* for weighting it or for other purposes.

In use, the bell *i* rides at a level determined by the gas pressure in the vessel *j*. An increase in such pressure causes the bell to descend and so lower the bell *g* with the hole *f* therein leading to the overflow. This allows the liquid in the compartment *c* to fall to a lower level, so increasing the cross-sectional area for the flow of gas beneath the plate *b*. If the pressure in the gas main falls, the level of the overflow hole *f* is raised; the cross-sectional area for the flow of gas is then restricted as liquor accumulates in *c*. If gas generation ceases, the bell *i* rises to such a height that the liquor closes completely the passage for the flow of gas through the main beneath the plate *b*.

Under no conditions can gas gain access to the chamber *d*, the entrance to which is always sealed by the liquor.

"Our improvement," state the patentees, "provides a cheap, simple, and reliable method of and means for controlling the area for gas flow in the gas main to suit the vacuum or pressure conditions."

Removing Clinker in Gas Generators. No. 329,146.

HUMPHREYS & GLASGOW, LTD., and GLASGOW, A. G., both of 38, Victoria Street, Westminster.

No. 13,954; May 4, 1929.

According to this invention, the inlet and outlet closing means of the clinker and ash receiving pocket of a mechanically clinkered gas generator or producer of the totally enclosed type are provided with interlocking means which prevents the inlet and the outlet of the pocket being open at the same time, but permits the discharge of clinker and ash during the operation of the generator or producer at will, and without risk of the passage of gas or air through the pocket.

Road-Making and Roof-Making Material. No. 329,569.

SOUTH METROPOLITAN GAS COMPANY and PICKARD, H., of Old Kent Road, S.E. 15, and HUGHES, C. M. C., of Maida Vale, W. 9.

No. 22,595; July 23, 1929.

It is an object of this invention to produce a material for use in the construction of roads, roofs, or the like, which is specially resistant to crushing and shearing forces at high atmospheric temperatures. This quality in the material is due to the use of a bituminous binder made by dispersing coal in coal tar at a temperature of 250° to 300° C., the proportion of coal added being such that the final dispersion constituting the binder has a melting point of 115° to 122° C. and a hardness as measured by the penetration test of 1 to 5. The material according to the invention is made by admixing, while heating, the bituminous binder with a mixture of granite or other hard stone chippings ranging in size from ⅜ in. to ¼ in. and stone dust or sand. The percentage proportions of the different ingredients are, approximately: Binder 15 to 18, stone dust 26 to 30, and stone (⅜ in. to ¼ in. gauge) 55 to 58.

The ingredients are mixed at a temperature sufficiently high to ensure fluidity of the binder, and the hot plastic mixture may be transferred to moulds for blocks and subjected to a pressure of about 100 lbs. per sq. in., or may be spread while hot over a suitably prepared road foundation.

Applications for Patents.

[Extracted from the "Official Journal" for July 2.]

Nos. 19,029—19,759.

BORCHARDT, A.—"Cooling closure devices of heating gas pipes." No. 19,353.

EWART, S.—"Gas-heated geysers." No. 19,452.

MILLER, F.—"Automatic gas controls." No. 19,293.

NAAMLOOZE VENNOOTSCHAP SILICA EN OVENBOUW MIJ.—"Carbonization of coal." No. 19,384.

PREMIX GAS PLANTS, LTD.—"Apparatus for combustion of gaseous mixtures." No. 19,630.

GAS MARKETS & MANUFACTURES

Stock Market Report.

[For Stock and Share List, see later page.]

Although there was no material increase in the volume of business on the Stock Exchange last week, it is satisfactory to note that markets generally showed signs of a slight recovery from the depression which has overshadowed them for some time past. Gilt-edged securities again dominated the situation, and it is reported that large parcels of these commodities have been acquired by American buyers.

The Gas Market last week was no exception to the general rule, and, as will be seen from the Stock and Share List, the number of transactions recorded was very small. There was only one change in price—that of Newcastle ordinary at the local Exchange, which dropped 4½d. to 16s. per £1 unit. This is a low price for such a first class security, and there appears to be no justification for the present fall. For the past two years the Company has paid dividends at the rates of £5 3s. 9d. (1928) and £5 7s. 6d. (1929), and the yield on the latter distribution at the present price is £6 14s. 4d. p.ct.

Among those companies operating abroad, we would draw attention to the £10 shares of the Cape Town Company as a potential investment. The business of the Company has progressed steadily for some years past, the sales of gas last year showing an increase of nearly 7 p.ct. A dividend of 7 p.ct. has been paid for the years 1921-28, and 8 p.ct. was distributed for 1929. The value of the shares has been slowly but surely appreciating, and at the current price of 9½ gives a yield of £8 8s. 5d. p.ct. The shares changed hands last week at 9⅜ and 9⅝.

Coal Markets.

Conditions could scarcely be worse in the coal markets, and not only is prompt trading in a serious condition, but forward business also shows not the slightest sign of improvement. It might be possible to take contract orders for long periods at current prices, but they are too low to interest the majority of the collieries. On the other hand, there is no business for the early positions for which they are quoted. Other countries are feeling the pinch also, and competition for orders is becoming ever keener. It is reported that German railway rates for export coal have been reduced by from two to five shillings a ton—an indirect subsidy calculated to help German exporters at the expense of this country and Poland.

The position generally is that prices remain more or less unchanged, it being thought that lower quotations would not attract any additional business. So outputs are being adjusted to demand by laying pits idle when necessary, which is, unfortunately, very frequently in all districts. Durham gas is very quiet, with Wear specials round 15s. 9d. f.o.b., and best qualities 15s. 6d. Seconds are seriously affected, and, though the general quotation is 13s. to 13s. 3d. f.o.b., the lower figure can probably be shaded for some brands. The Yorkshire export price for screened gas is 15s. 6d. to 16s. 6d.

Gas coke continues generally steady, at round 21s. 6d. for prompt. An interesting contract was reported during the week of 200,000 tons from a south country gas-works for Denmark.

Current Sales of Gas Products.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *July* 7.

The values of tar products remain unchanged, and are as under:

Pitch, 47s. 6d. per ton f.o.b.

Creosote, for export, 6d. to 6¼d. per gallon f.o.b.

Pure toluole, 2s. 2d. to 2s. 3d.; 95/160 solvent naphtha, 1s. 5d. to 1s. 6d.; pure benzole, 1s. 10d. to 1s. 11d.; pyridine bases, about 3s. 9d.—all per gallon *ex* sellers' works.

Tar Products in the Provinces.

July 7.

The average prices of gas-works products during the week were: Gas-works tar, 20s. to 24s. Pitch—East Coast, 46s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 46s. f.o.b.* Toluole, naked, North, 1s. 7¼d. to 1s. 8¼d. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 3d. to 1s. 3½d. Heavy naphtha, North, 1s. to 1s. 0½d. Creosote, in bulk, North, liquid and salty, 3½d. to 3¾d.; low gravity, 1½d.; Scotland, 3½d. to 3¾d. Heavy oils, in bulk, North, 5½d. to 6d. Carbolic acid, 60's, 2s. to 2s. 1d. July/December. Naphthalene, £12 to £14. Salts, £5 to £5 10s., bags included. Anthracene, "A" quality, 2½d. per minimum, 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port, it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *July* 5.

Business continues very dull, with stocks of almost all items increasing, prices are rather weak. Buyers are not yet showing any sign of taking advantage of to-day's low prices.

Pitch.—There are very few inquiries circulating for forward shipment, and meantime prices remain nominal at about 47s. 6d. per ton f.o.b. Glasgow. Home orders command 47s. 6d. per ton f.o.r. makers' works.

Tar remains steady at 3¼d. to 3¾d. per gallon f.o.r. in buyers' packages.

Creosote.—There has been more home inquiries on the market, but prices remain easy. B.E.S.A. specification is 3½d. to 4d. per gallon; low gravity, 3d. to 3¼d. per gallon; neutral oil, 3d. to 3¼d. per gallon—all *ex* makers' works in bulk.

Cresylic.—The position is unchanged. Values are easy at 1s. 8¼d. to 1s. 9¼d. per gallon for pale 97/99 p.ct.; 1s. 7d. to 1s. 8d. per gallon for dark 97/99 p.ct.; and 1s. 10¼d. to 1s. 11¼d. per gallon for pale 99/100 p.ct.—all f.o.r. works.

Crude naphtha is 4¼d. to 4¾d. per gallon f.o.r. makers' works in bulk quantities.

Solvent naphtha is in moderate demand. 90/160 is 1s. 2¼d. to 1s. 3½d. per gallon and 90/190 is 1s. to 1s. 1d. per gallon.

Motor benzole is quieter, but quotations are meantime unchanged at 1s. 6¼d. to 1s. 6¾d. per gallon.

Pyridines remain lifeless, 90/160 quality being about 3s. to 3s. 3d. per gallon.

Benzole Prices.

The following are considered to be the market prices at the present time:

	s. d.	s. d.	
Crude benzole	0 10	to 0 11	per gallon at works
Motor ,,	1 5¾	,, 1 6½	,, ,,
Pure ,,	1 10	,, 1 11	,, ,,

Overseas Opportunities.

[From the Board of Trade Journal.]

Canada.

Catalogues and Price Lists of the Latest Types of Gas Stoves, Fires, Water-Heaters, and Other Gas Appliances (excluding Gas Lighting Fixtures) for Either Domestic or Industrial Use.—The Office of H.M. Trade Commissioner at Winnipeg reports that a local firm wishes to receive from British manufacturers catalogues and price lists of the above. British firms manufacturing these goods can obtain further particulars on application to the Department of Overseas Trade, 35, Old Queen Street, S.W. 1. (Ref. A.X. 9799.)

Trade Notes.

Gas Oven for a Bakery School.

The York Gas Company have installed a gas-fired oven, by Cox & Son, of Tyseley, Birmingham, in the new bakery school recently fitted up by the York Education Department.

New Domestic Boiler Features.

The "White Rose" open fire domestic boiler, by Hartley & Sugden, Ltd., of Halifax, can now be supplied in the mottle grey porcelain enamel finish. A special feature is that the boiler, which supplies domestic hot water using coke or other fuels, is fitted with sliding doors to the fire, thus avoiding the unsightliness due to the discoloration of hinged doors after contact with the fire.

Stormproof Lamplighting Torch.

An acetylene torch which burns for two hours with one charge of carbide at a cost of one-eighth of a penny is made by William Moyes & Sons, of 142, Waterloo Street, Glasgow. A special feature claimed for it is that it is stormproof. Under actual test on the front at a sea-coast town, in a wind amounting almost to gale force, the torch never went out, whereas the lamplighter reported that with an old-style oil torch it would have been practically impossible to light the lamps.

Contracts Open.

Coal.

The Gas Committee of the Clitheroe Corporation invite tenders for the supply of coal. [See advert. on p. 104.]

Pipes.

The Pontypridd Urban District Council invite tenders for the supply of steel mains. [See advert. on p. 104.]

STOCK AND SHARE LIST.

[For Stock Market Report, see earlier pages.]

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. July 4.	Rise or Fall on Week.	Transactions Lowest and Highest Prices During the Week.
£			% p.a.	% p.a.				
171,978	Stk.	Feb. 6	5	5	Aldershot 5 p.c. max. C.	73—78	..	..
522,992	,,	,,	4	4	Do. 4 p.c. Pref.	70—73	..	..
1,551,868	,,	Apl. 3	7½	7½	Alliance & Dublin Ord.	93—96	..	..
374,000	,,	Jan. 9	4	4	Do. 4 p.c. Deb.	60—63	..	..
522,655	,,	Mar. 6	7	7	Barnet Ord. 7 p.c.	109—112	..	..
300,000	1	Apl. 24	1/4½	1/7½	Bombay, Ltd.	16/6—18/6	..	..
174,500	10	Mar. 6	9	9	Bournemouth 5 p.c.	14—15	..	..
500,050	10	,,	7	7	Do. B 7 p.c.	12½—12¾	..	..
439,160	10	,,	6	6	Do. Pref. 6 p.c.	10¾—11½	..	11
50,000	Stk.	June 26	3	3	Do. 3 p.c. Deb.	54—57*	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb.	72—75*	..	..
357,900	,,	Mar. 20	7½	7½	Brighton & Hove 6 p.c. Con.	114—117	..	..
871,880	,,	,,	6¾	6¾	Do. 5 p.c. Con.	102—105	..	..
1,287,500	,,	Feb. 20	5	5	Bristol 5 p.c. max.	89—90a	..	..
855,000	,,	Apl. 3	7	8	British Ord.	110—115	..	..
100,000	,,	June 26	7	7	Do. 7 p.c. Pref.	112—117*	..	..
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	70—73*	..	..
450 000	,,	,,	5	5	Do. 5 p.c. Red. Deb.	90—93*	..	..
100,000	,,	June 26	5	5	Cambridge 5 p.c. Deb.	93—96*	..	..
100,000	10	May 22	6	10	Cape Town, Ltd.	9—10	..	9½—9⅝
100,000	10	Apl. 24	4½	4½	Do. 4½ p.c. Pref.	6¼—7½	..	..
150,000	Stk.	June 26	4½	4½	Do. 4½ p.c. Deb.	69—74*	..	..
626,860	,,	Feb. 20	6	6	Cardiff Con. Ord.	96—99	..	97⅜
287,860	,,	June 26	7½	7½	Do. 7½ p.c. Red. Deb.	97—100*	..	..
157,150	,,	Feb. 20	5	5½	Chester 5 p.c. Ord.	88—93b	..	..
98,936	1	May 8	†2/-	†2/-	Colombo, Ltd. Ord.	33/—35/-	..	..
24.500	1	,,	1/4½	1/4½	Do. 7 p.c. Pref.	1*/6—20/6	..	..
375,402	1	Apl. 3	1/9½	1/9½	Colonial Gas Assn. Ld. Ord	18/—20/-	..	..
187,848	1	,,	1/7½	1/7½	Do. 8 p.c. Pref.	19/—21/-	..	..
2,073,280	Stk.	Feb. 20	5	7	Commercial Ord.	90—93	..	91
475,000	,,	June 26	3	3	Do. 3 p.c. Deb.	56—59*	..	57
787,560	,,	Feb. 20	7	7	Croydon sliding scale	105—108	..	106½—107
453,100	,,	,,	5	5	Do. max. div.	83—86	..	..
542 270	,,	Mar. 6	7	10	Derby Con.	115—125a	..	..
55,000	,,	June 26	4	4	Do. Deb.	65—70c*	..	..
209,000	,,	Mar. 6	5	5	East Hull Ord. 5 p.c.	71—73	..	..
1,002,180	10	Mar. 20	†4	†7	European, Ltd.	12—13	..	..
18,629,125	Stk.	Feb. 20	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	18/9—19/3/	..	18/9—19/3
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	63½—65½	..	63¼—64½
4,157.020	,,	,,	4	4	Do. 4 p.c. Con. Pref.	77—80	..	77½—78⅜
5,602,620	,,	June 26	3	3	Do. 3 p.c. Con. Deb.	58—61*	..	59—59½
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb.	97—100*	..	..
161,480	,,	Feb. 20	10	10	Harrogate Cons. 10 p.c. max.	158—163	..	..
82.500	,,	Mar. 20	7	7	Hastings & St. L. 5 p.c. Conv.	99—104	..	103—103½
258.740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	78—83	..	..
70 000	10	May 22	†10	‡	Hongkong & China, Ltd.	13½—14½	..	14
213,200	Stk.	Mar. 6	6	6	Hornsey Con. 3½ p.c.	90—93	..	..
2 436,594	,,	May 22	10	25	Imperial Continental Cap.	340—360	..	343—349
223,130	,,	Feb. 6	3½	3½	Do. 3½ p.c. Red. Deb.	80—85	..	..
295,242	,,	Mar. 20	8½	8½	Lea Bridge 5 p.c. Ord.	123—128	..	..
2,145 907	,,	Feb. 20	6	6	Liverpool 5 p.c. Ord.	91½—97½b	..	..
600.000	,,	Mar. 20	7	7	Do. 7 p.c. Red. Pref.	100—102b	..	..
165,736	,,	Feb. 20	9	8	Maidstone 5 p.c. Cap.	119—124	..	..
63,480	,,	June 26	3	3	Do. 3 p.c. Deb.	51—54*	..	..
75,000	5	June 26	†10	†10	Malta & Mediterranean Metrop'itan (of Melbourne)	5¼—6*	..	..
892,000	—	Apl. 1	5½	5½	5½ p.c. Red. Deb.	90—93	..	..
541,920	Stk.	May 22	†6	†8	Montevideo, Ltd.	107—112	..	..
2,061,315	,,	Feb. 20	5	5½	Newcastle & Gateshead Con.	15/9—16/3d	—/4½	..
682,856	,,	,,	4	4	Do. 4 p.c. Pref.	71½—72½d	..	..
691,705	,,	Dec. 19	3½	3½	Do. 3½ p.c. Deb.	66⅝—67½d	..	..
169,940	,,	Mar. 6	7½	7½	North Middlesex 5 p.c. Con.	109—114	..	..
396,160	,,	Feb. 6	5	5	Northampton 5 p.c. max.	75—78	..	..
300,000	,,	Apl. 24	9	7	Oriental, Ltd.	108—113	..	..
60,000	5	13 My., '15	—	—	Ottoman	0—¼	..	..
205,162	Stk.	June 26	8	8	Plym'th & Stonehouse 5 p.c.	105—108*	..	..
424,416	,,	Feb. 20	8	8	Portsm'th Con. Stk. 4 p.c. Std	110—115	..	..
241,446	,,	,,	5	5	Do. 5 p.c. max.	78—81	..	..
186,000	100	June 2	4	4	Primitiva 4 p.c. Red. Deb.	96—99	..	..
677,837	Stk.	Jan. 23	4	4	Do. 4 p.c. Red. Deb. 1911	81—84	..	..
371,496	,,	June 26	4	4	Do. 4 p.c. Cons. Deb.	79—82*	..	..
150,000	10	Apl. 3	6	6	San Paulo 6 p.c. Pref.	8¼—9	..	..
1,736,968	Stk.	Mar. 20	6¼	6¼	Sheffield Cons.	103—105e	..	..
95,000	,,	Jan. 9	4	4	Do. 4 p.c. Deb.	76—78e	..	..
90.000	10	June 5	†4	‡	South African	4—6	..	..
6,709.895	Stk.	Feb. 20	5	7½	South Met. Ord.	102—104	..	102½—103½
500,000	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	108—111	..	..
1,895.445	,,	Jan. 9	3	3	Do. 3 p.c. Deb.	58—61	..	60½
734,000	,,	Mar. 6	6¼	6¼	Do. 6¼ p.c. Red. Db.	99—101	..	100—100⅜
91,500	,,	Mar. 20	8½	8½	South Shields Con.	106½—107½d	..	..
1,543,795	,,	Feb. 20	6½	6½	South Suburban Ord. 5 p.c.	101—104	..	102½
498,827	,,	June 26	5	5	Do. 5 p.c. Deb.	93—96*	..	94½—95½
647,740	,,	Feb. 20	5	5	Southampton Ord. 5 p.c. max.	76—79	..	..
121,275	,,	June 26	4	4	Do. 4 p.c. Deb.	71—74*	..	..
179,914	,,	Feb. 20	8	8	Sutton Ord.	113—116	..	..
67,828	,,	June 26	5	5	Do. 5 p.c. Deb.	93—96*	..	..
250,000	,,	Mar. 6	7	7	Swansea 7 p.c. Red. Pref.	98—100	..	..
200,000	,,	June 26	6½	6½	Do. 6½ p.c. Red. Deb.	97—100*	..	..
1,076,490	,,	Mar. 6	6⅝	6⅝	Tottenham District Ord.	102—106	..	103½—104⅜
150,000	,,	,,	5⅜	5⅜	Do. 5½ p.c. Pref.	97—100	..	..
199,005	,,	June 26	4	4	Do. 4 p.c. Deb.	73—76*	..	..
182,380	10	30 Dec., '12	—	—	Tuscan, Ltd.	3⅜—4⅜	..	..
85,701	Stk.	Mar. 20	6	6	Do. 6 p.c. Red. Deb.	75—80	..	..
309,094	,,	Mar. 6	7	7	Uxbridge, Maidenhead, & Wycombe 5 p.c.	94—99	..	..
88,330	,,	,,	5	5	Do. 5 p.c. pref.	85—90	..	87—89½
1,180,970	,,	—	—	—	Wandsworth, Wimbledon, and Epsom Cons.	108—113	..	111—111½
200,000	,,	Feb. 20	5	5	Do. 5 p.c. Pref.	87—92	..	..
488,344	,,	June 26	5	5	Do. 5 p.c. Deb.	93—96*	..	..

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of Stock. * Ex. div. † Paid free of income-tax. ‡ For year. § Div=10 p.ct. p.a. less tax and less tax on interim dividend.

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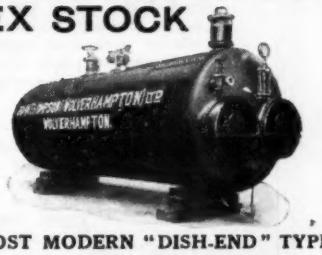

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Two 30 ft. × 8 ft. 6 ins. ×	160 lbs.	6970/1
Two 30 ft. × 8 ft. 6 ins. ×	160 lbs.	6983/4
Two 30 ft. × 8 ft. 3 ins. ×	160 lbs.	6871/2
One 30 ft. × 8 ft. 3 ins. ×	120 lbs.	6931
One 30 ft. × 8 ft. 3 ins. ×	120 lbs.	6982
One 28 ft. × 7 ft. 6 ins. ×	160 lbs.	6785
Two 20 ft. × 6 ft. 0 ins. ×	150 lbs.	6864/5

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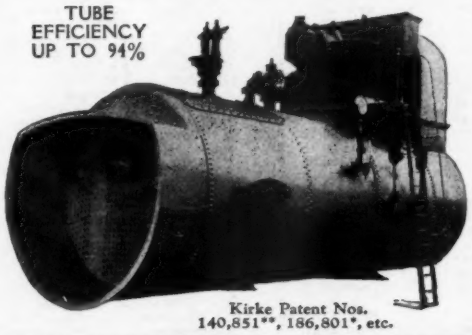

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NO. 6. WATER GAS PLANTS
have been fitted with these Boilers.

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have been received from One Firm alone.

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CONTENTS

EDITORIAL NOTES.

A GLANCE AT THE CONTENTS . . 131
The Berlin Conference 132
Gas an Important Part 132
Synopsis 132
Highways and Byways 133
To Extract or Not to Extract? 133
To an End 133
Correspondence Classes 134
Barnsley Not Alone 134
Street Lighting by Gas—Solving Unemployment Problems 134

Personal 134
Obituary 134
Forthcoming Engagements 134

CORRESPONDENCE.

Correspondence Classes 135
The Line of Demarcation 136
Hours of Industrial Employment 136
Results at Bradford 136

National Gas Council—Meeting of Central Executive Board 136

THE NEWS OF THE WEEK.

Coke Oven Managers' Association—Tenders of the Oxford and District Gas Company—All-Round Reductions at Stratford-on-Avon—Royal Sanitary Institute Congress Medals—Attractive Gas Exhibition — Thermal Storage—A Lady Demonstrator—Electrical Installation Work—Continuous Press Publicity—Budding Heating Engineers—Extraordinary General Meeting of the European Gas Company 137
Activity at Coatbridge 138
Council House Tenants and Gas 138
Notes from Scotland 138
Bottle Your Own Fruit 138
Joint Working in the Metropolis 138

Second Plenary World Power Conference—
Opening Proceedings 139
Effect of Legislation and Control by Public Bodies on Gas and Electricity Supply . 145
Gas Markets 146
Construction and Operation of Large Power Plants 149
Economic Problems of High-Temperature Distillation 151
Solid Fuels: Production, Trade, and Treatment 156
Education 156
Relative Places of Gas and Electricity in Industrial Heating. By Sir Robert A. Hadfield, Bart., and R. J. Sarjant . . 157

PARLIAMENTARY INTELLIGENCE.

House of Lords—
Private Bills 158
Special Orders 158
House of Commons—
Private Bills 158
No Freedom of Choice for the Tenant . . 158
Unopposed Bills—
Brixham Gas and Electricity Bill . . . 158
Ascot District Gas and Electricity Bill . 158

GAS MARKETS AND MANUFACTURES.

Stock Market Report 159
Coal Markets 159
Current Sales of Gas Products 159
Overseas Opportunities 159
Contracts Advertised To-Day 159
Trade Notes 160

Gas Acts (1920 and 1929) Orders 160
Gas in Melbourne's Highest Building . . 160
City and Guilds of London Institute—Technological Examinations, 1930 160
Stock and Share List 161

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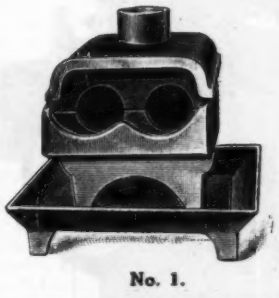

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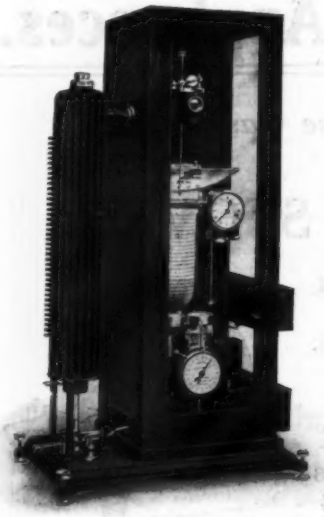

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